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UNIVERSITY OF ALBERTA

Homicide Rates in Canadian Cities: A Macrosociological Analysis of 1971, 1976 and 1981

BY

David Robert Forde

(C)

A THESIS SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF SOCIOLOGY

EDMONTON, ALBERTA

FALL 1992

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SUBMITTED BY: David Robert Forde

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

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ABSTRACT

This study assesses why murder varies over time and across social spaces. Cross-sectional regression models are used to estimate the relationship of social disorganization, economic inequality, criminal opportunity, and demographic composition with disaggregated murder rates (family, acquaintance, and stranger) while controlling for the effects of city size, regional location, and age- and sex-standardized murder rates in Canadian cities for the time periods 1971, 1976 and 1981.

Homicide data, supplied by the Canadian Centre for Justice Statistics, are detailed incident-based information gathered by Canadian Police Departments on victims of homicide committed between 1967 and 1981. Social, economic, and demographic information on covariates with homicide are compiled from the Canadian Census.

The study reveals weak support for the proposition that homicide varies by city size. Correlational analysis clearly shows that population size and density do not have strong influences on homicide rates.

Murder in Canada, clearly, is regionally distributed, rising from east to west. The regional effect, however, is convergent in urban areas with higher levels of inequality and social disorganization.

Some criminologists have argued that demographic composition can have a strong influence on crime rates. This study, to the contrary, indicates that age- and sex-structure

of Canadian cities has a small influence on murder.

Considering the trends in homicide victimization, there were some interesting differences in the information when the samples are divided according to city size. Large and small cities do not necessarily have different homicide rates, but the murder rates are much more predictable for large urban areas.

Aggregate social characteristics of cities are hard to measure but general trends and relationships are evident. In small cities we expect that divorce, lone-parent households, ethnicity, and migration will influence family murder rates.

In large cities we project that trends in population density, labour force participation, lone-parent households, and ethnic composition will influence family homicide rates where ethnic composition and migration levels are high but this will be held in check if labour force participation opportunities increase. Stranger homicide rates are less predictable but are expected to increase more dramatically than family murders due to increased pressures from higher population density, greater numbers of lone-parents, higher net migration, and higher levels of ethnic minority groups.

The study concludes with recommendations for amelioration of conditions linked with murder. In particular, policy analysts may look to resource mobilization as a social response that will negate structural conditions associated with murder.

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Chapter 1

INTRODUCTION

Criminal violence is a multi-faceted social construct. Criminologists have approached the issue of crime from several vantage points. For example, they have asked 'What predisposes persons to commit violence?'; 'Who are the offenders and victims of violent crime?'; 'How likely is it that persons with particular demographic characteristics will be involved in criminal violence?'; and also 'Where and when are the crimes more likely to occur?' This study, however, is not a conventional examination of crime. It does not extensively review the literature on characteristics of criminal behaviour, the elements of victimization, or crime classification. Sociologists and criminologists have offered a variety of theories for the causes of crime so that these areas are well represented in the literature. Contemporary research has addressed the issue that rates of violent crime vary irregularly over time and across spatial boundaries although the findings have been inconsistent. My aim is to use sociological perspectives to link the study of crime rates with the study of structural characteristics of society bringing into the explanation an account for the temporal and spatial variation in crime rates.

Criminal violence is a very important public issue as it arouses fear and often causes severe injury. This study

examines homicide victimization, with particular emphasis on how social factors influence when and where it happens in Canada. Other violent crimes (robbery, assault, and sexual assault) are included with homicide when violence such as rape or armed robbery causes death. The latter crimes, however, have developed their own specialized literatures and are not discussed here (see Small 1987; Ellis 1989).

This study is set in a general discussion of the distribution of homicide victimization across spatial boundaries and the effect that homicide has on the ways that people adapt to their environments. First, consider the fact that Edmonton, Alberta, for example, has held notoriety as 'Murder City' in Canada. To the contrary, Charlottetown, P.E.I., and many other cities in Canada, often go without a single murder in a given year. What is the average rate of homicide victimization in Canadian cities? Is it similar to the rate of victimization for Canada as a whole? We consider these questions as we examine the level of homicide in Canadian cities. Second, we will ask whether people have reacted to differential levels of homicide? Have Canadians migrated away from high crime areas and into low crime areas? Also, what is the relationship between violence at one point in time with another? Third, this study investigates the influence of other factors in the social environment as they lead to violence. For example, we may ask whether there is a relationship between poverty,

unemployment, and homicide? If so, attention should be focused on an alleviation of these root causes of violence. The primary thesis guiding the investigation is that the ecological environment influences social relations which coincide with the incidence of homicide. The data analyses are drawn from hypotheses derived from contemporary perspectives on violence. We examine the patterns of social, economic, and demographic processes and structure in Canadian cities. The purpose of the analysis is to demonstrate which variables best explain the spatial and temporal distribution of Canadian homicide rates.

A. HOMICIDE IN CANADA

Violence trends in Canada show that homicide is a rare event. For example, in 1986 the homicide rate was 2.2 per 100,000 population (about one-quarter of the rate in the United States). While there is a pattern over the past thirty years where Canadian rates are a quarter to a third that of American rates, researchers debate whether Canadian rates will converge with American rates (see Lenton 1989b; Hagan 1989a). Overall the literature suggests, comparatively, that Canadians suffer less violent crime than Americans. Nonetheless, the frequency of homicide, particularly by strangers, is of concern to Canadians. Perceptions of street crime, and fear of crime in general, are of much concern to the public even where victimization

rates are low (Solicitor General 1985). Despite its low frequency, homicide, thus, is a significant social issue in Canada.

Evidence shows that homicide in Canada, as elsewhere, is not a unidimensional phenomena. Homicide rates may change over time. Current national homicide rates are higher than those for the 1950s and 60s but lower than those of the mid-1970s. Explanations for this temporal variation are sparse.

Studies also indicate that crime is spatially distributed in Canada. Crime, particularly homicide, varies regionally (Rae 1981; Kennedy et al. 1988). Crime rates generally rise as one travels from east to west. This east-west phenomenon persists over time for personal and property crimes (Hackler and Don 1990). Much has been written in the popular literature about these higher levels of homicide in Western Canada than in Central and Eastern Canada. A number of reasons are offered to explain this "Wild West" phenomenon: higher levels of transiency, alcohol abuse, and divorce in the West. In the past, crime incidence has been explained based on regional subcultures, operationalized in terms of varying tolerance for violence (Baron and Straus 1988). More recently, Kennedy et al. (1990) have suggested that violence may be explained in terms of structural factors such as aggregate unemployment, urbanization, and poverty which vary by region of the country.

Evidence also shows that violence depends on situational factors. There is strong evidence emerging in the homicide literature that it is unwise to treat homicide as a uniform event (see Nettler 1982; Williams and Flewelling 1988). Lethal violence varies dramatically in circumstance depending particularly on the nature of the relationship between the offender and victim: family, acquaintance, stranger, and crime-based (see Silverman and Kennedy 1987; Loftin and Parker 1985). For Canada and the U.S., Straus (1988) points out notable differences in the proportions of family and stranger homicides. Looking at 1961-83, there is a large cross-national difference in proportions of domestic homicide with about 25% of U.S. homicides classified as intra-family where the Canadian proportions are much higher at about 46% of all homicides (Straus 1988,p.7). Stranger homicides account for about one third of homicides in the U.S. as compared to 22% of homicides in Canada, over time, the proportions of lethal violence among strangers are increasing in U.S. urban centres (Williams and Flewelling 1988) and decreasing in Canadian cities (Silverman and Kennedy 1987).

Incorporating relational distance in homicide research, studies may find very different explanations of the root causes of homicide according to relationship. For example, where intimate violence may be best explained using the literature developed in the area of family violence (Straus

1988), stranger and crime-based homicide seems better explained using routine activities theory, as illustrated by Kennedy and Silverman (1990) in their study of elderly victims.

A variety of factors have been proposed as explanations for the temporal and spatial distribution of homicide rates. Establishing a clear picture, however, to describe contemporary trends in violence using existing research poses a number of problems. To some extent researchers have lacked precise information with which to test their hypotheses. Studies also have suffered as researchers have not fully utilized information that is available, reporting simple correlations rather than multiple factor designs. Informed by the debate on the importance of structural factors in explaining Canadian homicide rates by Lenton (1989b; 1989c), Hagan (1989a; 1989b), and Kennedy et al. (1989), we will examine the strength and temporal stability of social structural differences as they influence homicide rates.

B. RESEARCH LITERATURES

Criminologists offer a variety of competing explanations for the extent and distribution of crime in social settings (Kennedy 1990). On one hand, homicide is explained as a crime where a regional subculture tolerates lethal violence as a solution to social problems (Baron and

Straus 1988). On the other, there is a general agreement in the literature that the social production of violence is a consequence of inequality (Krahn et al. 1986). Recent debates using a social economy approach focus on the interplay between political and economic forces to understand crime rates (McMullan and Swan 1989). Much of the research is set in the context of a revived interest in the research literature on macro-level factors examining the effect of community structure on crime rates (Sampson 1989). American researchers have explained the etiology of violence in terms of structural factors, such as, aggregate inequality, racial composition, and poverty (Blau and Blau 1982; Messner 1989).

Criminologists have been concerned about whether there is a link between structural forces and criminality. Past studies, however, have encountered complex statistical and conceptual problems as researchers have attempted to establish the differential effects on violence of regional location (Huff-Corzine et al. 1986), social disorganization (Sampson and Groves 1989), inequality (Blau and Blau 1982), and opportunity (Cohen and Felson 1979). Recently, Cohen and Land (1987; see also, Land et al. 1990) have argued against complex mathematical models saying that relatively simple models can account for a substantial proportion of the variation in homicide rates.

Sociological research on criminal violence underscores

the politicization of social and economic concerns. Specifically, this literature examines how higher levels of economic deprivation and social disorganization place minority groups in a position of relative social disadvantage. This has consequences for all aspects of social life influencing employment, ethnic relations, family relations, voting patterns and other public behaviour (Brym 1989). The politicization of crime, most importantly, can influence how crime is defined.

A beginning step in explaining the causes of criminal homicide is the development of an adequate classification scheme. A focus on the social relationship of victim and offender is paramount, as a starting point, for understanding the homicide event (see Silverman and Kennedy 1987). The information on victim and offender relationship is available in detail and is complete for most homicide incidents. Other situational factors are important but the present collection procedures are less reliable.

Research also shows that definitions of violence as crime vary historically reflecting the distribution of social structural location (Foucault 1975). Persons in a position of power may perform an act that otherwise would be socially condemned. Violence, in some instances, may be legitimized such that it is justified and ultimately goes unpunished. The definition of an act as a crime also depends on time and circumstance. For example, homicide at

some times may include killing by police, abortion, infanticide, and self-defence as legitimate actions (not crimes). Nevertheless, predatory crimes are usually not tolerated. Rape, unprovoked assault, and murder are nearly universally condemned.

Following the difficulties of defining behaviour as crime comes the problem of recording the volume of crime. There are long standing arguments among sociologists and historians on the usefulness of official statistics for estimating the level of criminal violence in society (Kitsuse and Cicourel 1963). The major issue with respect to comparative research is the degree to which official statistics reflect ecological biases in official responses to criminal behaviour (Archer and Gartner 1984). Homicide is recognized as the most accurately measured crime (Archer and Gartner 1984). Evidence, overall, shows that the risks of criminal victimization tend to be higher for those who have low social status, little power, and low income (Taylor et al. 1975). There is general agreement that criminal victimization rates reveal fundamental differences in the distribution of violence throughout the population. This study links the study of crime with the study of social structure. The major question is whether or not there is a relationship between social processes, structure, and homicide rates within Canada.

C. SUMMARY AND CHAPTER OUTLINE

Previous studies of homicide in Canada have centred largely on a description of characteristics of homicide incidents. Demographic characteristics of victims and offenders and the circumstances of homicide incidents within Canada and the provinces have often been portrayed (see Statistics Canada 1988).

Violent crime may be examined using a variety of perspectives (Brantingham and Brantingham 1984). Chapter 2 reviews the major themes that have emerged in the homicide literature on the social patterns of violence. Traditional approaches to crime, social disorganization and inequality theories, are examined but found somewhat inadequate. Routine activities and demographic composition perspectives are introduced as this study attempts to build an explanation for why homicide in Canada varies over time and across social spaces.

Chapter 3 starts with a discussion of hypotheses about homicide rates in general and their relation with regional location, city size and situational factors for census years: 1971, 1976 and 1981. It moves to a description of measurement strategies and a designation of the sample. Chapter 3 concludes with a discussion of methods that are used to test the hypotheses.

Chapter 4 describes the extent and variation of the incidence of homicide in Canada over time and across space.

The homicide rates for cities are presented showing the situational distribution along the victim and offender relationship. Regional and city size differences in victimization rates are discussed. Finally, the crude homicide rates are discussed in relation to rates standardized by age and sex.

The covariates of homicide are introduced in chapter 5. This chapter highlights the content of the city-level data set. The form of the distribution of each variable is examined. Further problems for addressing social context are discussed.

Chapter 6 presents regression models describing the relationships between homicide and its covariates. Within this chapter, the importance of city size, region and demographic factors are reviewed and discussed as they relate to the homicide literature. The nature of this literature rests on the study of urbanism, regionalism, and demographic composition in Canada. The results of the analyses are presented and are reviewed in the context of the existing body of research on homicide. Finally, Chapter 7 summarizes the findings, discusses the theoretical and methodological implications of the study, and suggests areas for future research.

Chapter 2

SOCIOLOGICAL THEORIES ABOUT VIOLENT CRIME

Traditionally, criminological research on the social causes of violence has emphasized interrelationships of macro- and micro-level theory that consider collectivities and individuals explaining variation in crime rates as either control or motivational processes (see Gartner 1990). Control theories focus on social conditions which suppress formal and informal control mechanisms leaving individuals free to engage in rewarding criminal behaviour. The question is not 'Why is it that persons commit crimes?' but rather 'Why is it that persons do not commit crimes?' (Braithwaite 1989). Researchers have examined a number of social factors related to social controls. Examples include breakdowns in social networks (Shaw and McKay 1942,1969; Sampson and Groves 1989), family units, and school experiences (Hirschi 1969) as they are associated with attenuated supervisory capacity, inadequate socialization, and, most importantly, with an increase in community crime rates. Control theories link the unbounded temptations of individuals to engagement in crime by examining factors which diminish the social bond between the criminal offender and the social order.

Motivational theories highlight processes which promote tendencies to violence in a population. For example,

societal strain, including Merton's (1938) anomie theory, may lead to increased crime rates. The blockage of opportunities through legitimate means for fractions of society may engender alienation, frustration, and aggression which finds expression as criminal violence. Societies which discriminate against ethnic and racial minorities, also, may see the development of subcultures of violence (Wolfgang and Ferracuti 1967). Motivational concepts linked with economic inequality and subcultural formation processes may explain the high levels of homicide between and within minority groups in society.

Control and motivational theories concentrate primarily on explaining the behaviour of offenders. Recent research on criminal violence shifts the focus from the offender to the victim examining the circumstances under which victimization occurred. The routine activities perspective (Cohen and Felson 1979) shows how factors related to the victim converge with opportunities for criminal victimization. Its strength is that it identifies how and when particular groups in the population are more likely to be victimized. Lifestyle provides an account for increasing crime rates in the United States when motivational and control models predicted otherwise.

What is it that may explain inconsistencies in the criminological literature on violent crime? Neuman and Berger (1988) suggest that criminological theories are

immature and that research on comparative crime is full of ambiguity in definitions and empirical findings. To some extent, problems for studies of lethal violence have carried over from theories that were designed originally to explain delinquency, and assumed to explain crime in general (e.g. Shaw and McKay 1942,1969). Identifying all of the problems underlying delinquency theories is beyond the scope of this project, but the main problems are discussed later in this chapter. Gartner (1990) and Land and associates (1990), optimistically, suggest that contemporary criminological theories may explain the variation in crime rates but that methodological problems have obscured the results within existing models.

This chapter reviews the literature indicating areas still in need of research; showing the considerable overlap between theories despite claims to the contrary; and stressing the lack of temporal studies within nations (see Krahn et al. 1986). In the analysis that follows, this study provides an integrated examination of control, motivational, and opportunity theories.

A. SOCIAL DISORGANIZATION

The social disorganization perspective, going back to Durkheim's (1982/1895) theory of how social forces influence individual behaviour, assumes that crime is caused by a

disruption of the social order where social structural changes fail to coincide with modern values. Social disorganization theory ties closely to modernization theories of development (Chirot 1977) explaining variation in crime rates by focusing on exogenous factors to anomie (lawlessness) such as urbanization, industrialization, socioeconomic status, cultural heterogeneity, and population mobility. The unsettling effects of population change (Wirth 1938); imbalances that occur through overly large age cohorts (Maxim 1985; Easterlin and Schapiro 1979); tension that occurs in families identified through the increase in divorce (Gillis 1986); conflict between ethnic groups (Sampson and Groves 1989); and linguistic heterogeneity (Hansmann and Quigley 1982) may lead to social breakdown in the traditional normative structure disrupting informal and formal community ties (Durkheim 1933; Braithwaite 1989). Focusing on breakdowns of the normative structure, the social disorganization perspective contains two distinct variants with different explanations on the causes of increase in deviant behaviour: social control and strain theories (Kornhauser 1978,p.24).

1. Social Control Theories

Social control theories demonstrate and explain the association between social forces and social sentiments as they influence behaviour. A good deal of contemporary macro

research on crime control can be traced to Emile Durkheim's theory of social differentiation (see Turner 1990), and Shaw and McKay's theory of social disorganization (Sampson and Groves 1989). Below we discuss each in turn, and comment on several recent studies.

According to Durkheim (1933/1893), the modernization of society influences the embodiment of consensus through the exchange of norms and values. In less modern or "mechanical" societies he suggested that there was a greater resemblance of persons enabling homogeneity of norms and value consensus. In modern or "organic" societies social forces (an increasingly specialized division of labour) naturally lead to complex social exchange and greater heterogeneity (differences) in society. Social solidarity is maintained through the increased interdependence of persons in the division of labour. The greater size of society, however, restricts social exchange so that there will be less consensus in society.

Considering crime, specifically, Durkheim stated that crimes are acts that "... shock sentiments which, for a given social system, are found in *all* healthy consciences" (1933/1893, p.73 emphasis added). He considered law in society to represent universally the conscience collective. Punishment of acts against the law therefore enabled the betterment of society as a form of crime control (delineating consensus for social solidarity and social

boundaries), rather than cure the sickness of an individual (Durkheim 1982/1895, p.102). The "... criminal no longer appears as an utterly unsociable creature, a sort of parasitic element, a foreign unassimilable body introduced into the bosom of society. [Also]... [f]ar from there being cause for congratulation when it [crime] drops too noticeably below the normal level, this apparent progress coincides with and is linked to some social disturbance" (1982/1895, p.102). Crime in society is a social rather than an individual concern. Crime in society is beneficial in that it calls attention to social disorganization.

Although there is much ambiguity in Durkheim's writings on the causes of crime, his research provided a basis for criminologists to study the relationships between social variables and crime. Official crime counts, he assumed, represent the embodiment of the level of consensus in a society. Durkheim showed how homicide rates covaried with public temperament (see 1958, pp. 110-120) such as political beliefs, civilization, the occurrence of wars, the number of public holidays, etc. Whether or not punishment controls crime and leads to moral integration is an ongoing issue (see Currie 1985).

Shaw and McKay (1942,1969) elaborated on social control theory,[1] examining the incidence and concentration of gang

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[1] Shaw and McKay's research has also been described as ecological theory, and cultural-deviance theory. Ruth

delinquency in the urban slums of Chicago. They presented a "community-level" theory of social disorganization where breakdowns in social ties -- an indicator of a lack of control -- associate positively with crime rates and coincide with three structural factors: low economic status, ethnic heterogeneity, and residential mobility (see Sampson and Groves 1989,pp.774-75). Shaw and McKay, similar to Durkheim, assumed the person's motivation to crime (criminality) was relatively constant but social behaviour (crime) was a function of living in a disorganized social area. Part of their premise about social control mechanisms focused on internal constraints such as guilt, and shame (see Braithwaite 1989) that "bond" individuals to common values (see also Hirschi 1969). More importantly, however, Shaw and McKay (1942,1969) suggested that the social control mechanism operates from external constraints on formal and informal ties that impede the ability to promote problem solving: family disruption, delinquent peer groups, school and workplace organization, and other social networks. Welfare-based program interventions to improve social networks were proposed as a means to control crime rather than simply relying upon punishment and imprisonment. This suggestion about social structure has profound implications for punitive- and reform-based social policy.

Kornhauser (1978) provides an in-depth discussion of their various models for examining delinquency.

Social control theories have undergone considerable criticism, particularly from conflict theories (see Braithwaite 1989). Durkheim's theory of social process is open to question (O'Brien 1985) and reinterpretation (Giddens 1984; Turner 1990) because of vagueness in the operationalization of constructs and specification of linkages between concepts. Also, there remain questions on the accuracy of official statistics with which to measure many aspects of crime and disorganization. Nevertheless, social control theories using a Durkheimian model have received moderate support from cross-national (Messner 1982,1989), state (Chamblin 1989), and metropolitan level (Messner 1983) studies of robbery and homicide rates. Shaw and McKay's theory of social disorganization has received much support from many macro-level studies using indirect measures, and recent support using direct measures of social disorganization and social networks based on survey data (Sampson and Groves 1989). Although studies conflict over the influence of deterrent (punitive) and placative (welfare-based) social control on crime rates, this study examines both types of control process to assess their influence on homicide rates (Devine et al. 1988; Jackson 1984). With the resurgence of community-based research in macrosociology and criminology (see Sampson 1989; Reiss and Tonry 1986) there is an opportunity to evaluate the recent attacks on social control theories, particularly from

neoclassical theory (e.g. Wilson and Herrnstein 1985). *The key point of social control models is reflected in the proposition that breakdowns in formal and informal community ties lead to loss of social control which is associated with an increase in crime rates.* Crime-prevention efforts based on the broad effects of social variables can also look to the effects of social and historical inequality and discrimination (discussed in greater detail in the section on inequality) as bases for placative and deterrent aspects of social control.

2. Strain Theories

Strain theories are similar to social control theories in that they focus on the social distribution of social norms, values, and goals. There are strong similarities in the types of variables that we may examine to test each theory. The two perspectives are somewhat incompatible, however, as strain theories assume that motivational rather than control processes are the cause of variations in crime in a population.

Merton's (1938) anomie theory and concept of relative deprivation provide the basis for strain theories of violence. Below we discuss Merton's concepts, and describe how strain theories have considerable overlap with economic inequality theories (discussed in greater depth in the next section), and some ties to cultural-deviance perspectives.

Merton's (1938) and Durkheim's (1933/1893) definitions of anomie are similar in that they refer to a condition where there is a breakdown in the regulation of the social structure of society. Merton's strain theory is contingent on the separation of values into goals and means. Whereas values, as embodied in a collective conscience, are absent for Durkheim's version of anomie, values must be strong for Merton's version to cause strain between aspirations for success and the means to achieve them. For Durkheim, anomie is normlessness in relation to goals. All of society suffers from anomie. For Merton, anomie is normlessness in relation to means (see Kornhauser 1978,p.165). Subgroups of society suffer from anomie. Specifically, those in conflict with societally proscribed goals and without legitimate access to the means to achieve the goals resorted to crime. A problem with research on structural imbalance and crime, however, is that it is often difficult to distinguish empirically between means and goals (Kornhauser 1978). While the causal ordering on how strain comes about is different, in this study we are concerned with whether or not strain is associated with homicide. We need not be concerned with how strain came about.

Considering the social distribution of violence, Merton sought to explain social conditions in the United States, particularly the overrepresentation of lower-class persons in crime statistics. He linked motivational processes of

individuals' choices in social groups, as individuals deviated from norms, using the concept of relative deprivation. Merton suggested that persons will experience feelings of deprivation when they experience situations that are unfavourable with those of other groups or individuals (Abercrombie et al. 1988). Merton placed a strong emphasis on following institutional means to release aggression, but suggested that individuals adapt to the strain. They will commit crimes when means to achieve goals are blocked (see Vold 1979, Chapter 10). The social distribution of crimes showing an overrepresentation of persons from the lower classes, thus, may be explained as an social artifact since individuals from this group are subject to greater strain in American society.

Research support for strain theory has been mixed (Baron and Koenig 1989/90). Nevertheless, many contemporary studies rely on Merton's strain theory, particularly his concept of relative deprivation. Researchers assume that the prevalence and intensity of violence is motivated because of strains produced by a particular social context: economic inequality, conflict, and propensities to cultural-deviance. *The basic proposition of strain models, nonetheless, is that strain (economic, conflict, or culturally based) leads to aggression which is associated with criminal violence.* These mixed models are each discussed briefly below.

Blau and Blau (1982,p.126) use strain and inequality theories to make the case that aggressive acts of violence, higher homicide rates among ethnic minorities (blacks) and economically impoverished groups, result from economic stress produced not so much from lack of advantage as from being taken the object of disadvantage. Strain is tied to relative inequality so that poverty, per se, need not have a direct link to levels of violence. Relative income inequality because of discriminatory social processes contributes to economic stress within minority groups (Messner 1989). Racial discrimination perpetuates economic inequality which in turn contributes to strain. The targets of violence, however, tend to be the minority groups themselves, Canadian-Natives for example (Kennedy et al. 1989). The motivational process producing high rates of intra-ethnic violence can be understood as misdirected or "diffused aggression" (Blau and Blau 1982,p.119).

Strain and conflict models are very often mixed in studies of inter-ethnic violence. Violence is not only higher among minority groups but may be directed toward minority groups by others. For example, Creech, Corzine, and Huff-Corzine (1989) show that lynching of blacks by whites during the early 1900s in the Southern U.S. came about because of a relative threat to white economic and political hegemony. Lenton (1989a) suggests the same discriminatory processes operate in Canada as an explanation

for the extremely high Canadian-Native homicide rates. The idea of minority group threat has also been extended to gender stratification research considering the relationship between social strains such as the changing social status of women (Fiala and LaFree 1988) in the context of womens' relative lack of power (see Gartner, Baker, and Pampel 1990).

Finally, there is a very large body of research where elements of strain theory are mixed with cultural-deviance models. Much research has been directed at explaining the regional variation in American homicide (Huff-Corzine et al. 1984), rape and assault (Baron and Straus 1987), and physical punishment of children (Straus 1991). Perhaps the most famous dispute in this literature is the debate on the presence or absence of a Southern subculture-of-violence (see Wolfgang and Ferracuti 1967) condoning lethal violence as a solution for social problems (Hackney 1969; Gastil 1971). Social strains are linked to racial and economic differentials. A problem, however, is that both Southern regional culture and other structural factors are related to higher rates of violence in Southern states (see Hawley and Messner 1989). The so called "Southerness" may represent a regional subculture-of-violence promoting higher levels of homicide in Southern cities and states, but living in the South may also indicate structured regional economic inequalities (Baron and Straus 1988).

Strain theory alone or in combination with other theories about violence can easily be called into question. Many of the problems are simply an ambiguity in measures so that it is not possible to establish whether a motivational or control process is operating. Aggregate research on homicide in the U.S. is compounded by a high degree of collinearity of independent variables (Light, 1984). More importantly, prior macro-level research has exclusively concentrated on explaining total rates of violence (see Parker 1989) rather than the heterogeneity in the rates themselves. Blalock (1989) calls this a numerator/denominator problem where researchers would like to test motivational processes which lead to strain across social groups using rates but they often do not have the required individual-level information for the numerator. Solving this problem has been difficult because official statistics usually do not include the information to make comparisons across the desired groupings. Comparisons of homicide rates disaggregated to account for motivational processes will allow a stronger test of social disorganization theories, particularly strain.

B. INEQUALITY THEORIES

In contrast to the theories of violent crime as a

product of social disorganization with a breakdown in social norms are inequality theories that see violence caused by the effects of differences in status characteristics such as income and prestige as they destabilize social control and weaken interpersonal relations. Evidence links violence with poverty, unemployment, social class, and economic influence. *The basic proposition of inequality models is that social and economic inequality lead to increased violence.* In all instances the basic assumption is that the economically disadvantaged will be more likely to engage in criminal behaviour (Krohn 1976). However, there is much disagreement about which social processes best explain the positive association of inequality with violent crime: social class, absolute inequality, or relative inequality. The relationship of criminal violence and inequality, as with social disorganization theories, also may be mediated by other social factors. Below we present the evidence for and against inequality theories, particularly for studies of homicide.

Evidence from studies of individuals and groups according to perspectives as diverse as evolutionary psychology (Daly and Wilson 1988), exchange (Blau 1977), critical criminology (Taylor et al. 1975), and Marxism (Bonger 1916/1967) suggest a positive influence of inequality on crime (Neuman and Berger 1988). The explanations for how inequality comes about, and how it is

linked to crime differ significantly across each of the above perspectives. Also, there are various propositions about factors which may mediate the extent of inequality and its relationship with criminal violence: resource deprivation (Browne and Williams 1989), social democracy (Braithwaite and Braithwaite 1980), economic discrimination (Messner 1989), ethnic heterogeneity (Avison and Loring 1986), societal development (Messner 1980; 1982), and unemployment (Krohn 1976). Similar to proposals in the social disorganization literature, there are recent suggestions that homicide is not a homogenous event and that inequality may have differential effects for different types of homicide. Absolute resource deprivation, for example, may enhance the effect of relative inequality on spousal homicide (Browne and Williams 1989), child homicide (Daly and Wilson 1988a; Fialla and LaFree 1988), as well as stranger homicide (Parker 1989). Finally, while several factors may mediate the relationship between inequality and crime causing the destabilization of interpersonal relations, there are disputes about what is an appropriate unit of analysis to examine interpersonal relations.

Evolutionary psychology (Daly and Wilson 1988a), which we refer to as biosociology, describes the importance of inequalities in the production of crime using the concept of adaptiveness (1988a). The suggestion is that homicide varies in interaction with age, unemployment and marital

status. Much of the focus of biosociologists is on marital status and attendant circumstances. Daly and Wilson (1988b) concentrate their efforts on an analysis of family based murders ignoring, for the most part, other relationships. They offer the proposition that there is a greater likelihood of homicide the more distantly related the principals and that this is more likely to occur with young people (1988b). These events occur, they argue, as a result of genetic predispositions to jealously guard blood relatives while being more violent towards those unrelated to the offender. The analysis done by Daly and Wilson, while purporting to address the contextual elements in the environment that might influence behaviour, focuses only on individual characteristics of victims and offenders leaving out important macro-level indicators of the social structure in which homicide occurs. Their analysis appears to suffer from the same problems unaccounted by Wilson and Herrnstein (1985). Evolutionary approaches, Cohen and Machalek argue, can be seriously weakened by their treatment of the individual as the proper unit of analysis because it renders them "... incapable of understanding fully how populations of interacting individuals create social contexts that both facilitate and inhibit deviant and criminal behaviour" (1989,p.467). Cohen and Machalek maintain that the interactive dynamics of social systems, compared with individual traits, are themselves at least equal, and often

far more potent, contributors to the behavioural choices that are made in the population (1989,p.467).

While Cohen and Machalek argue that the mediating effect of age inequality and its indirect effect on homicide might find their origins in evolutionary explanations of expropriative behaviour, they depart from Daly and Wilson and others in the biosociological tradition in their belief that these are not genetic but rather culturally based. An important part of this analysis revolves around the notion of criminal opportunity, providing a conceptualization of how cultural differences, defined through variations in life styles, can increase exposure to criminal risk. Risk will be discussed in greater detail in the section on routine activity perspectives. Comparative perspectives on crime and inequality are discussed below.

In spite of the long standing recognition of the relevance of macro-sociological comparisons (e.g. Durkheim 1933/1893), there are relatively few cross-national studies of inequality and criminal violence (see Neuman and Berger 1988). Krohn (1976) suggests that researchers have avoided making cross-national comparisons because of the sparsity of reliable and published information about social variables. Archer and Gartner (1984) also describe the many difficulties in collecting comparable information about crime and other variables from state agencies in their study of cross-national crime rates. Another source is the World

Demographic Handbook (various years) which publishes tables on a wide variety of social and economic indicators.

Results, now, are fairly uniform across cross-national studies (Avison and Loring 1986) with greater inequality positively associated with increased homicide rates. In many of the studies, economic inequality is operationalized as relative income dispersion usually measured as a Gini coefficient. This variable, however, does not explain the origin of social inequality. While studies often directly test the influence of economic inequality on crime, few provide a direct test of which social processes lead to and perpetuate inequality (Messner 1989). Also suffering from a lack of information, world systems research (Chirot 1977) suggests that there is a direct link between occupational structures (as seen in occupational status) and social inequality, but cannot easily test the link. Economic measures are easier to operationalize than factors, such as, social class and status. In sum, cross-national research provides at most a preliminary estimate of the effects of inequality on crime because of the paucity of information with which to test hypotheses. Most cross-national studies of crime and inequality also fail to consider the influence of two factors in crime rates: temporal changes in violence and wide variation in levels of violence within nations.

Studies of cities and metropolitan areas indicate similar results to cross-national research but with an

increased number of inconsistencies across studies. At first glance, the variability across studies looks discouraging for an answer about the relation between inequality and crime. For example, Blau and Blau (1982), using U.S. data, report a positive relation on homicide for relative deprivation but not absolute poverty. Messner (1982) asserts that neither income inequality nor poverty are related to homicide. Messner (1983a) in a later study claims a positive influence on homicide of structural poverty (see Loftin and Hill 1974) but not economic inequality. The instability, in part, comes from a confusion of different measures of inequality.

There has been much debate over the merits of poverty versus economic inequality. Bailey (1984) indicates mis-specifications in reports by Blau and Blau (1982) and Messner (1982) and using their data set he reports a positive relation of homicide with poverty but an insignificant relation with inequality. Williams (1984) and Williams and Flewelling (1988), to the contrary, report statistical errors in previous research so that there is a positive and significant relation of homicide with percent poor. Further, when controlling for racial composition, studies show that there are consistently strong effects on homicide of economic inequality (Williams 1984; Sampson 1985).

A general conclusion in the homicide literature is that

there is a weak association between inequality and homicide. We see that there are disagreements about the strength of the relationship, appropriate units of analysis, and variables that should be used to measure inequality. We must note, however, that no study directly contradicts a positive link between inequality and homicide. The main focus should shift to an examination of which aspects of inequality lead to homicide, rather than simply whether inequality leads to homicide, so that we may explain some of the inconsistencies in the homicide literature.

C. ROUTINE ACTIVITIES OR LIFESTYLE THEORIES[2]

The routine activities or lifestyle perspective originated in studies of victimization by Hindelang, Gottfredson, and Garofallo (1978), and has been further developed by Cohen and Felson (1979) using the concept of criminal opportunity. We have discussed how social disorganization theories highlight how crime may be seen as a product of a breakdown in social norms. Further, we have seen how inequality theories suggest that violence is linked to inequality, but violence may be understood as misplaced aggression. While social disorganization and inequality theories assume different processes linking social structure

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[2] Much of this section draws from Kennedy and Forde (1990a,1990b).

to crime rates, each has tended to concentrate on factors which motivate or control offenders' propensities to crime. Motivations, however, are not an the important explanatory aspect for routine activities theory (and social control theory) as motivations for crime are assumed to be contant. The emphasis of the routine activities perspective shifts the focus from the offender to examine the relationship between the victim and crime. There is considerable interest in the effect that crime has on the ways in which people adapt to their environments. Much has been made about the influence that being alone in one's neighbourhood at night has on the fear levels that people express in victimization surveys (see Skogan and Maxfield 1981; Kennedy and Silverman 1984/85). Implicit in this work is the belief that fear will reduce the pursuit of day and nighttime activities as these raise the exposure and vulnerability to crime. The routine activities perspective addresses how the social context of urban environments may influence the relationship between activities and criminal victimization. Below we review the origins of the theory and show how it emerges as a key perspective for understanding how structural factors influence homicide in Canada.

Research has linked the likelihood of criminal victimization with regularities in behaviour. Routine activities theory, influenced by the works of Shaw and McKay (1942) and Hawley (1950), proposes that the probability of

being a victim of crime increases with the convergence in space and time of three factors: motivated offenders, suitable targets, and the absence of capable guardians against crime (Cohen and Felson 1979; Felson and Cohen 1980). Much of the literature testing routine activities theory has focused on characteristics of victims as suitable targets or unsuitable guardians, considering how following a particular lifestyle or routine may enhance the vulnerability to crime (Maxfield 1987). The evidence is that daily routines of some people increase the likelihood (or opportunity) that their person or property will be visible and accessible to motivated offenders (Hindelang et al. 1978). The importance of this research rests with the attempts that have been made to educate the public about how to deal with fear while maintaining normal routines and with the attempts by police to address the need to reduce public exposure to criminal victimization while keeping people from taking undue risks in raising their vulnerability to crime (Kennedy and Forde 1990a).

Recent research using victimization surveys has identified some problems for testing routine activities theory. Hindelang et al. (1978) propose that lifestyle, encompassing differences in age, sex, marital status, family income, and race, influences daily routines and vulnerability to criminal victimization. Victimization surveys include information on many aspects of crimina

victimizations such as location, circumstance, presence of alcohol or drugs, and the relationship of victim to offender. Researchers use a variety of measures to operationalize lifestyle. For example, following certain lifestyle routines should raise the probability of being in public places during different time periods (day and night). Cohen and Felson (1979) consider nighttime versus daytime activities as important features of lifestyle, using measures of employment and marital status as indicators of such activity patterns. Miethe, Stafford and Long (1987) have criticized routine activities research as usually lacking independent measures of victims' lifestyles, with researchers substituting demographic correlates for lifestyle. These critics have also suggested that routine activities theory applies to property but not to personal crimes, and that nighttime activities away from home interact with demographic factors to produce property victimization.

Kennedy and Forde (1990a) challenge the suggestions of Miethe et al. (1987) reporting how activities, including sports, frequenting bars, going to movies and restaurants, going to work, and being out of the house walking or driving around are related to increased property victimization. These studies support the view that people are vulnerable to property crime because of the absence of guardians from the target of this crime, i.e. their household.

Public lifestyles, or lack thereof, also may enhance personal victimizations. Offender entrance into what are thought to be vacant premises, instead finding the elderly person in their home, may be a factor in the higher than expected levels of crime-based homicide of the elderly (Kennedy and Silverman 1990). Further, Kennedy and Forde (1990a) report that the most vulnerable groups to assaults are young, unmarried males who frequent bars, go to movies, go out to work and spend time out of the house walking or driving around. There is a similar pattern for robberies. It appears that it is this public behaviour that creates exposure to risk and, while it may be the case that violent crime is spontaneous, the targets of this crime are more likely to be people who are in places where this conflict flares up. This research does not explain crime motivations but it does explain exposure to crime and identifies those groups who are most likely to experience this exposure. This research is guided by a single proposition: that those who follow risky routines will be more often subject to dangerous results. Kennedy and Forde (1990b) flesh out some of the details of lifestyles which expose people to more or less criminal victimization. Their study goes beyond demographic characteristics of victims. Using specific measures of activities and lifestyle, they document the consistency of predictability of criminal victimization for personal and property crimes showing that risky lifestyles

enhance exposure to crime.

Routine activities theories present a more sophisticated attempt to understand the spatial and temporal distribution of crime in its social context (Neuman and Berger 1988). Cohen and Felson (1979) argue that much behaviour is both repetitive and predictable. *The basic proposition is that opportunity factors will interact to create conditions in which individuals experience greater exposure to criminality (McCall 1987). With the nonrandom convergence in space and time of motivated offenders, suitable targets, and the absence of capable guardians the probability of being a victim increases.* In many ways, the theory may be considered as a perspective on the criminology of place (Sherman, Gartin, and Buerger 1989). The motivation of offenders is considered as constant, whereas opportunities for criminal victimization vary depending upon the victims' lifestyle. Victimization surveys show how daily activities of victims affect the likelihood that property and personal targets will be both visible and accessible to illegitimate activities. The timing of criminal acts will be based on a convergence of victim activities with what the offender thinks he (or she) knows about the activities of a target.

Macrosociological research tends to support the routine activities perspective. Evidence shows how economic factors may influence crime rates. Increased prosperity may

increase the attractiveness of targets for theft (McCall 1987). Unemployment may restrict access to activities outside the home (Cantor and Land 1985). Labour force participation, particularly increased female labour force participation, is linked to a dispersal of activities away from the home so that property is more often the target and women are more proximate to offenders (McCall 1987). Activities away from the home as seen in leisure rates also is positively associated with crime rates (Messner and Blau 1987). Focusing on factors such as unemployment and labour force participation it is possible to explore the influence of structural changes in the labour market as they create conditions in which individuals experience greater exposure to criminality and influence the level of homicide in Canada. Recall, however, that macrosociological research using the routine activities perspective on crime may be severely confounded by the absence of adequate measures of lifestyle (Maxfield 1987).

D. DEMOGRAPHIC COMPOSITION THEORIES

Demographic studies suggest that compositional differences in populations may account for differing levels of violence across jurisdictions and over time periods (Deane 1987; Maxim 1985; O'Carroll and Mercy 1989). Much of

this research first sought to explain the dramatic increase in violence during the 1960s and 1970s in the United States (see O'Brien 1989). Researchers have assumed that the propensities to violence are constant in societies, but that populations are diverse along a number of nominal parameters: age, sex, language, ethnicity, and religion. To compare crime rates, then, it may be necessary to correct or standardize rates to account for the heterogeneity of these parameters. *Stated in another way, the general proposition of demographic composition theories is that demographic factors may influence the volume of crime in a social area.* Below I review the major explanations for linkages between demographic characteristics of individuals and crime rates. The bulk of the literature places a near exclusive focus on the effects of age on crime. Fewer studies attempt to account for gender or ethnic differences in crime rates.

Wilson and Herrnstein (1985) suggest that one of the most robust results in criminological research is the negative association between age and crime. The proposition that criminal involvement as victim or offender diminishes with age is generally accepted in criminology (Farrington 1986). There is much debate, however, over both the explanation for the findings (Farrington 1986) and over methods for studying age.

Age structure is most commonly studied as "age composition" (i.e. the proportion of young people in the

general population) (Sheley and Smith 1988). Studies have demonstrated that temporal shifts in crime rates vary with changes in age composition of the population (Maxim and Jocklin 1980; Maxim 1985; O'Brien 1989). The evidence showing a connection between age composition and criminal offending is considerable, but the processes linking age to victimization are still in question. Wellford (1973) examines shifts in population size and age structure and attributes much of the increase in recorded crime in the U.S. to changes in the proportion of high-risk offenders and victims (young persons) in the population. Easterlin and Schapiro (1979) suggest that relative cohort size, rather than absolute population size, has a direct influence on crime. They note that relative economic disadvantages for larger birth cohorts will indirectly explain a decline in annual fertility rates (Lyster 1974) and more importantly they hypothesize a direct effect of relative cohort size on increased U.S. homicide rates. O'Brien (1989) examines age, period, and cohort effects for age-specific crime rates and finds support for the Easterlin hypothesis for most property crimes, but not for violent crimes. Similarly, Steffensmeier and Harer (1987) show that property crime rates (but not homicide) have decreased as the baby-boom population has aged. Direct ties of age to economic uncertainty, then may not hold up empirically.

The routine activities perspective provides an

alternative explanation for the relationship of demographic composition with crime rates by linking age to the concepts of lifestyle and exposure to risk (Cohen and Felson 1979). Evidence shows that age victimization rates for homicides in Canada increase rapidly for relatively young persons, level off, and finally diminish for elderly persons (Forde et al. 1990). Research on crimes less serious than homicide (e.g. robbery, assault) suggests that very young persons and the elderly are less exposed to risk since they spend more time in their homes. Young persons on the other hand, especially males, have risky lifestyles (such as going to taverns and bars) which expose them to greater victimization (Kennedy and Forde 1990). This differential in lifestyle and exposure is consistent with patterns for homicide rates.

The extent and generalizability of the age-crime relation, however, may be overstated since mathematical characterizations of age-patterns tend to be restricted because of the relatively poor breakdowns in official statistics (Forde and Odynak 1990). In this study it is possible to estimate the effects of age and sex on homicide. These demographic factors will be considered as we examine the influence of social disorganization, inequality, and routine activities on homicide rates in Canada.

Chapter 3

MEASUREMENT STRATEGIES, HYPOTHESES AND METHODS

A. INTRODUCTION

A variety of propositions about the social production of violence were discussed in Chapter 2. An examination of the homicide literature shows that there is much consensus about the causes of variation across space and time, despite claims to the contrary. Many studies indicate that homicide and violent crime are a product of the convergence of individuals and social and economic conditions present within a community. Several aspects of social disorganization, inequality, criminal opportunity, and demographic composition have been consistently replicated as predictors of violence. The consensus in the literature, however, is restricted since most research has been directed toward an explanation of violence in the United States. Consensus is also limited since researchers have tended to emphasize elements key to a specific viewpoint, rather than integrating information.

While there is much information in the homicide literature, the challenge for this study is to provide an empirical test of a theoretically integrated model of the distribution of homicide rates. This study draws from macro-level studies of homicide to present hypotheses about the influence of social-structural factors on homicide in

Canada. Below is a discussion of those hypotheses which can be tested for the total homicide rates and for homicide disagregated along the victim and offender relationship. We also examine homicide while considering the influence of city size, regionalism, and demographic factors.

Following the presentation of hypotheses is a discussion of the operationalization of homicide rates, the designation of a unit of analysis, and the selection and operationalization of city characteristics as covariates of homicide rates. This study gathers information on homicide and city characteristics for Canadian urban areas. Briefly, the sample is 109 urban areas in Canada observed at five-year intervals covering 1971, 1976, and 1981. The unit of analysis is an urban area-time period. The analysis is confined to these urban areas and time periods because of restrictions in the available data. The limitations of these data are described in more detail as the variables are operationalized. The strength of these data, on the other hand, derives from few measurement problems and most importantly in the greater flexibility for analysis of several types of homicide using urban based units of analysis.

The final section of this chapter describes the method of analysis that will be used to test the hypotheses. It discusses the choice of techniques and describes the

processes for standardizing rates by age and sex. The hypotheses are tested in Chapters 4 and 6.

B. HYPOTHESES

The following section presents hypotheses about the relationship between social disorganization, inequality, criminal opportunity, and demographic composition with the total and victim and offender disaggregated homicide rates in Canadian cities.

This study also elaborates on a general model of homicide and its covariates to test questions about city size, regionalism, and demographic factors. The homicide literature shows that city size may influence the homicide rate through processes where greater urbanness leads to a higher heterogeneity of behaviours and elevated levels of crime (Fischer 1980). Similarly, regional subgroups in Canada differ markedly along economic and demographic characteristics so that there is a long term historical difference in homicide rates. Finally, demographic characteristics of victims of homicide, considered as situational factors, are expected to vary depending upon the context of social environments. We will examine homicide over the period 1971 to 1981 to determine how and if patterns have changed over time.

1. **Homicide and Social Disorganization**

A basic proposition of the social disorganization perspective is that in times of rapid social change there is a breakdown in the level of social integration (Williams and Flewelling 1988) which previously constrained the level of violence in society. At a general level the basic hypothesis then is that social disorganization is positively related to homicide rates. Specific hypotheses for each of the variables are listed below.

a. Urbanization will be positively related to homicide rates (Shaw and McKay 1942).

Greater urbanization (population growth and density) is expected to disengage formal and informal community ties and this will be assocated with crime.

b. Breakdowns in residential ties (high mobility) will be positively related to homicide rates (Sampson and Groves 1989).

Mobility may contribute significantly to population growth, density, and urbanization. It is a long standing argument that residential mobility is expected to disrupt social ties and community stability (Shaw and McKay 1969).

c. Family disruption (Divorce and a high percentage of lone parent families) will be positively related to homicide rates (Shaw and McKay 1942).

Divorce is considered as a measure of social disintegration; the number of divorces compared to the number of marriages in a given year is an indication of the level of social disorganization in an area. Higher levels of divorce are an indication of higher levels of family and marital disruption which consequently may decrease informal social controls in the community (Sampson and Groves 1989,p.781).

Concommitant to divorce are changes in family structure. The two-parent household provides greater supervisory capacity and guardianship over their household and property (Cohen and Felson 1989). Sampson (1987) argues that family disruption may decrease informal social controls (increasing social disorganization) at the city level. An increase in family disruption is expected to lead to an increase in crime rates.

d. Crime in an area will be positively related to homicide rates.

The level of crime in an area is often neglected in comparative research on crime (Jackson 1989) since few

structural studies include information on crime rates as part of their models. There may be some interpretive problems, however, with the inclusion of crime-level as a predictor of homicide rates. Its use creates the potential for a tautological explanation of homicide since murder is used to explain murder. However, we argue that the prior crime-level logically is an aspect of social disorganization. We need not agree on the causal mechanisms behind disorganization since communities may either work to increase the level and effectiveness of social control in the community or to reduce strain by increasing opportunities for non-deviant behaviour. Including crime-level variables in the model simply allows us to assess the relationship between criminogenic conditions, living in a social context where there are high levels of disorganization, and homicide. Analytically, we do not face substantial problems as we test the relationship between murder and its prior level producing models with and without the prior murder rates.

e. Poverty will be positively related to homicide rates (Shaw and McKay 1942).

Most researchers consider absolute poverty as the percentage of families below a national poverty standard (Williams and Flewelling (1988). Poverty is considered to be absolute in

the sense that persons in the past year have not met the current national income standard necessary for the provision of basic food, shelter and clothing allowance as defined by Statistics Canada. We include absolute poverty as an aspect of social disorganization working on the assumption that social consensus is not possible if basic needs are not met. Note though that poverty may reflect both social disorganization and inequality factors. Income inequality will be reexamined in the next section.

Considering the disaggregated homicide rates, the literature suggests that social disorganization will be positively related to homicide rates. The effects of social disorganization should be found across social relations. Williams and Flewelling (1988) argue that increasing social disorganization (disintegration) decreases social control and intensifies interpersonal conflict. They also suggest this will lead to an increase in homicide rates across all social categories. Indicators of social disorganization, however, are most directly related to family disintegration. The effects of social disorganization, therefore, will be strongest on family, moderate on acquaintance, and weakest on stranger homicide.

2. Homicide and Inequality

Inequality may be operationalized in a number of ways including economic and noneconomic dimensions. Research

consistently yields the finding that social inequality is positively associated with crime (Krahn et al. 1986). The homicide literature suggests that inequality will be positively related to homicide rates (Messner 1989). In cases where there is inequality across ethnic groups in social rewards there may be a general frustration over feelings of "relative deprivation" (Blau and Golden 1986, p.15) so that where there is a higher probability of contact of ethnically heterogeneous groups there will be higher levels of violence. Research on poverty and inequality also has suggested that police forces tend to be larger in areas where there is a greater proportion of poor persons: areas which also have a greater problem of crime in the community. Specific hypotheses linking inequality and the total homicide rate are listed below.

a. Income inequality will be positively related to homicide rates (Krahn et al. 1986). This includes absolute economic inequality (Shaw and McKay 1942) and relative income deprivation (Blau and Blau 1982).

The primary arguments for this relation are that under conditions of resource deprivation the struggle for survival may be intensified (Williams and Flewelling 1988).

b. Ethnic and linguistic heterogeneity with be positively related to homicide rates (Blau and Golden 1986).

American research examines ties between group heterogeneity and crime (Balkwell 1990). In part, ethnic and linguistic heterogeneity is related to the level of social disorganization in a community particularly when considering the influence of new immigrants on community control. However, in the United States, studies attribute much of interpersonal crime to the importance that racial[1] differences closely correspond with economic distinctions. Canada has a much smaller proportion of the population representing visible minorities, but Canada has a large diversity of other ethnic groups. Ethnicity is considered here as an indicator of the level of inequality in an area because of the substantial barriers that ethnic minorities face in gaining economic rewards.

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[1] The American literature tends to focus on racial differences in the level of violence for blacks versus whites. Racial differences are less salient in Canada than are ethnic differences. Note that race and ethnicity are not considered here as the same thing but that the American literature will be drawn upon to highlight the strength of in-group preferences for homogeneity in the community.

c. The availability of institutional resources will be positively related to the homicide rate. That is, the relative size of police force is expected to be positively related to the homicide rate.

Researchers argue that the level of institutional resources is related to crime rates. Institutional resources include community services such as women's shelters, and policing. Browne and Williams (1989), for example, report that homicide rates are lower in areas where women's resource centres are present. At this time, historical information on trends in the number of women's resource centres is unavailable. We examine police services considered as an aspect of inequality. Police force size may also be understood in the context of deterrence and social control, but we operate on the assumption that Canadians have high consensus on the need for strong police services and that it is inequality in the ability to pay for services that is related to rates of crime. Previous studies, however, suggest that the relationship between police force size and crime is contentious. Jackson (1989) suggests that increasing police force size may reflect a greater commitment to social control and at the same time may reflect problems of social disorganization. American police forces tend to be larger in areas where there is a greater

proportion of poor persons with a concurrent greater problem of crime (demand for enforcement) in the community. Despite arguments about the reason for police strength, research suggests there is a positive association between police force size and crime rates.

Based on studies of homicide disaggregated by the victim and offender relationship, this study expects that the effect of inequality on homicide rates will be pervasive across social relationships. Interpersonal conflict among strangers (dissimilar ethnic groups) is expected to escalate to violence more often than among acquaintances and family members (Williams and Flewelling 1988). Also, where economic resources are restricted this will correspond with less institutional resources (formal social control) and greater levels of violence. The effect of inequality on homicide, thus, is expected to increase with greater social distance on the victim/offender relationship and should be stronger than that for the total homicide rate.

3. Homicide and Criminal Opportunity

Criminal opportunity theory has focussed on the dispersion of activites outside the household where the lifestyle of victims take them into contact with motivated offenders in the absence of capable guardians. Research shows that homicide rates vary with opportunity factors such as labour force participation, and unemployment since

structural changes may influence the types and intensity of routine activities of persons (Cohen and Felson 1979). As formal activities change, such as entry into (or exit from) the labour force, the expectation is that there will be concurrent changes in informal activities and most importantly a shift in victimization rates. The level of labour force activity is expected to be related to crime rates where the level of daily activities will influence community structure for supervisory capacity and guardianship over persons' households and property (Cohen and Felson 1989). Criminal opportunity theory suggests the following:

a. Formal social ties as evident in labour force participation (male, female, and total) are expected to be negatively related to homicide rates (Felson and Cohen 1980).

Where labour force participation rates are higher there will be less opportunity for persons to engage in or to be exposed to motivated offenders since workplace situations usually involve higher levels of formal supervision of daily activities.

b. The unemployment rate (male, female, and total) will be positively related to homicide rates (Cantor and Land 1985).

Studies of unemployment and crime have yielded inconsistent findings (Chiricos 1987). We have to consider whether we should look at the effect of unemployment as immediate or if it should be lagged over a period of time. Unemployment can also be interpreted as social inequality where the level of economic deprivation in a community has short and long term effects. Here, we expect that higher levels of aggregate unemployment will be positively related to homicide rates assuming that the dispersion of activities outside the home may take persons into areas where there is greater potential for predatory contact.

Changes in the opportunity factors are expected to be pervasive across social relationships in terms of dispersion of activities outside private households. This is expected to lead to differential effects of criminal opportunity so that there are shifts in the disaggregated homicide rates. Victimization may vary in relation to the type of location of an incident. Since most contacts within the home are with family members and close acquaintances, we may expect that victimizations in private spaces (their own homes) are by persons known to them (family members) (Messner and Tardiff 1985). Therefore as dispersion of activities

outside the home increases we may expect a decrease in the family and acquaintance homicide rates. Interestingly, this may not be a true relationship for the elderly since an offender may enter a dwelling on the premise that is unoccupied and instead a murder results as they surprise the elderly victim (see Silverman and Kennedy 1990). Considering stranger homicide, a positive relation between household activities and stranger homicide is expected. Concentration of activities outside the home is going to lead to greater exposure to situations where motivated offenders are present.

4. Homicide and Demographic Composition

The relationship between demographic composition and homicide is contentious (Gartner and Parker 1990). Most researchers present demographic variables as factors which condition the effects of social disorganization, inequality, and opportunity. Age victimization rates for homicides increase rapidly for relatively young persons, level off, and finally diminish for elderly persons (Farrington 1986). This pattern may be explained using a routine activities perspective on crime where victimization is linked to the concepts of lifestyle and exposure to risk (Cohen and Felson 1979). Research on crimes less serious than homicide (e.g. robbery, assault) has suggested that very young persons and the elderly are less exposed to risk since they spend more

time in their homes. Young persons on the other hand, especially males, have risky lifestyles (such as going to taverns and bars) which expose them to greater victimization (Kennedy and Forde 1990). Thus, where there are more males there will be more victimizations. In sum, demographic composition theories suggest:

a. Cities with a high percent of their population with high risk lifestyles (males, females, and total population of ages 20-34) will have higher homicide rates.
b. Cities with a high percent of their population with low risk lifestyles (males, females, and total population over age 65) will have lower homicide rates.
c. The sex-ratio, indicating a higher number of males in a population, will be positively related to homicide rates.

Considering the disaggregated models of homicide, the effects of demographic composition are expected to vary across the victim and offender relationship. Communities with a greater proportion of high risk males and an imbalance in the sex ratio may experience a higher level of stranger and acquaintance homicide. Young adult males, in

particular, may engage in a va iety of activities outside the home where they are expose to higher levels of risk.

5. City Size and Homicid

Based on propositions in he macrosociological literature by Fischer (1980) the relationship between city size and homicide the fo lowing effects are hypothesized:

a. City size will influence homicide rates so that larger ci ies will have higher rates than smaller c ies.[2]

b. The effects of inequality, social disorganizatio opportunity, and demographic composition wi l be stronger in more urban areas. That is their effects are expected to be stronger or larger cities (Fischer 1980).

6. Regional Location and Homicide

The present study explore explanations for the regional East to West variatio in rates of homicide in

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[2] Some research suggests that small towns will have higher rates than small cities (e.g. Archer and Gartner 1984). Unfortunately, it is n t possible to test this proposition using these data.

Canada. The importance of regional location as a cause of homicide is examined within the context of the relative importance of social disorganization, inequality, criminal opportunity, and demographic composition. The proposition is that the significance of regional variations will disappear once other factors are controlled. Further, these relationships should vary over time. In Canada a factor that is relevant to this analysis and may negate this prediction is the effect of an early commitment, at a national level, to the Welfare State, including the implementation of universal medicare. For example, the setting of national standards (i.e. programs) may negate the effects of inequality so that all regions have access to social services and adequate social control. As welfare programs are often controlled through regulation, by the federal government, regional and temporal differences in the allocation of these basic services vary to a lesser degree than if they were operated solely by the provincial governments. The hypotheses, therefore are as follows:

a. Homicide rates in Canadian cities are expected to be higher in Western Canada (Brantingham and Brantingham 1984).
b. The regional basis for homicide rates is expected to be spurious, disappearing once social disorganization, inequality, routine

activities and demographic composition are controlled (Kennedy et al. 1990).

c. The same effects as listed above are expected when the results are disaggregated across the victim and offender relationship.

7. Demographic Factors and Homicide

Throughout this study, a goal is to make comparisons of the incidence of lethal violence across urban areas. On one hand, comparing the total homicide rates across jurisdictions does reflect differences in the extent of victimization in an area. On the other, total homicide rates, and crime statistics in general, mask variations between cities simply because of the type of data that is examined. Use of the "total" homicide rate for a jurisdiction assumes that the degree of risk of experiencing victimization is constant for members of a population. Many studies, however, clearly show that levels of violence vary depending upon the demographic characteristics of victims (O'Carroll and Mercy 1989). Empirical studies show that the risk of homicide is strongly related to a persons age and sex (Wilson and Herrnstein 1985), and to the composition of the population, particularly young males (O'Brien 1989). While there is much debate on explanations of the relationship between demographic factors and the incidence of crime, studies generally show that crime rates are

influenced by age and sex composition. Based on the findings reported in the research literature on the association between demographic composition and homicide rates, the following results are expected:

a. Age and sex-standardized homicide rates will show a stronger positive association to demographic composition than the "crude" homicide rates.

Considering the estimation of mixed models of the effects of social disorganization, inequality, and routine activities variables, it is expected that these mixed models will be strongly conditioned by demographic factors. For example, youth may have a strong influence on lifestyle. Young adults may be more likely to engage in risky activities (e.g. going to bars) and they may have difficulty retaining full-employment suffering economic strain, unemployment, and irregular labour force participation. There will be stronger positive effects of income inequality and ethnic heterogeneity on homicide rates and diminished effects of social disorganization factors on homicide when controlling for young persons (Easterlin and Schapiro 1979). This effect should be strongest for the stranger homicide rates (Williams and Flewelling 1988). Conversely, the effects of social disorganization on homicide will be positively

enhanced and economic factors diminished for homicide rates controlling for elderly persons (Easterlin and Schapiro 1979). This effect should be strongest for intimate relations (Williams and Flewelling 1988).

C. MEASUREMENT STRATEGIES

A number of hypotheses about homicide have been discussed in this chapter. In modelling homicide in its social context, this study takes the urban homicide rates to be the unit of analysis for particular points in time. Below is a description of measurement strategies designating parameters for the homicide rates, choosing a unit of analysis, and selection of covariates.

1. Homicide Rates

In Canada, as in the United States, the traditional way of "officially" counting homicide is to count victims.[3] Statistics Canada has generated a national database for incidents which occurred during 1961-83.[4] Each police

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[3] For a detailed discussion of homicide in an historical perspective, see Canadian Centre for Justice Statistics (1987).

[4] Statistics Canada has established a process where this file is updated on an ongoing basis. To date, however, the updated file is not publicly available.

department reports to Statistics Canada via a "homicide return" which contains information about time, location, victims, offenders, offenses, and court appearances. These data represent information reported to Statistics Canada by police departments and may differ slightly from final court dispositions. In total, this file indicates that between 1961 and 1983 there were 10,627 victims of homicide.

Nettler (1982) describes a wide range of types of homicide where individuals may actively precipitate events leading to their own death via violent means (suicide, or war), and incidents where individuals were victims of circumstances beyond their own control (accidental or culpable). This study limits the definition to encompass criminal violence resulting in murders. Henceforth, in this study the terms homicide and murder refer to culpable or blameworthy homicides.

Information on murder in Canada is available using the homicide data file. The official definition of homicide, however, has changed over the 1961 to 1983 time period (Statistics Canada 1988). Because both infanticide and manslaughter were only reported from 1974 to 1983, these incidents will be excluded from the analysis. Hence, for this study these data represent first and second degree murder, committed in Canada (excluding manslaughter and infanticide).

The incident-based information described above will be used to calculate "counts" of the number of homicide incidents reported by each police jurisdiction in Canada. These counts will be used as the numerator portion in the calculation of homicide rates. For this study, permission was obtained to reorganize the incident-based data file described above to match cases to the boundaries of Canadian urban areas with police respondent codes reflecting urban population areas as designated in the 1981 Canadian Census.

2. Disaggregated Homicide Rates

Previous research has summarized a limited range of homicide rates for Canada, the provinces and metropolitan areas. The reorganized data file presents an opportunity to calculate a wide variety of homicide rates. Initially, the incident file is aggregated as a "total" count of victims in an urban area for a designated time period. The total number of homicide victimizations will be separated to account for some situational factors, presented as "disaggregated" homicide victimizations.

Parker (1989) suggests that previous research on homicide rates has failed to show consistent findings because the total category of homicide is treated as a unitary class of behaviour. Loftin and Parker (1985) show that the effects of being economically disadvantaged will

omicide (family, other
vary according to the type of h
ny). Williams and
primary, robbery, or other felo
homicides involving distant
Flewelling (1987) also show how
ikely to be affected by
social relationships are more l
primary homicides which are
structural conditions than are
characteristics and
more dependent on interpersonal
circumstances.

This study disaggregates t
he homicide victim and
offender relationship using thr
ee categories. The group
with the highest level of intir
acy is labelled family
members (legal and common-law)
including spouses, parents,
grandparents, nieces, nephews,
uncles, aunts, siblings, et
cetera. A second category incl
udes friends and
acquaintances involved in busir
ess relationships,
friendships, casual acquaintanc
es or other non-kinship
relationships. Finally, strang
ers are considered as those
victims and offenders having nc
known domestic or other
relationship and those who were
involved in criminal acts,
besides the homicide (Silverman
and Kennedy 1987).

To summarize, the numerato
rs of homicide rates are
calculated according to William
s and Flewelling's (1987)
procedures for estimating the t
otal, family, acquaintance,
and stranger homicide rates. M
issing information on the
victim and offender relationshi
p is estimated based on
extrapolation from the characte
ristics of known cases.
Further statistical problems ar
ise in the Canadian data,

however, because in most Canadian cities the annual number of homicides is low. To compensate for instability in estimates of homicide rates this study groups the number of incidents into five year time periods for each of the urban areas minimizing any random variation in year to year estimates. The final estimates are presented as an average yearly homicide rate per 100,000 population coinciding with the quinquennial years of the Canadian census: 1966-71, 1972-76, and 1977-81. These time frames may bias the average homicide rate so that it is a higher rate, but this will not influence overall patterns since violent crime including the Canadian homicide rate has varied monotonically over this time period (see Johnson 1988).

3. Unit of Analysis

Researchers examining social context must be sensitive to problems associated with the selection of a unit of analysis: nation, province, metropolitan area, or city. On one hand, there are problems of access to information about the unit. On the other, there may be differences in the types of social processes operating at a particular social level of analysis.

In Canada and elsewhere there is far more published data available for larger units of analysis. Official statistics for Canada as a whole are generally available on an annual basis for a wide variety of social and economic

indicators (e.g. Canada Yearbook annual). Moving down, in terms of size, to provinces, metropolitan areas, and cities there is much information available but it is published for fewer variables and very often the case records for these data are incomplete. For example, mobility information in the Census is published for large cities (e.g. Montreal) but not for small cities (e.g. Nanaimo). While lack of information about population and its covariates may restrict the choice of unit of analysis, it is not a primary factor limiting the focus of this study.

Considering the influence of unit of analysis on the examination of types of social processes, indeed many of the problems in the literature have come about where researchers attempt to extend comparisons across units of analysis (Neumann and Berger 1988). Macro-level theories may suggest that an effect is present at several levels of aggregation. Results of cross-national studies, however, may not necessarily apply to state or city-level studies, or vice versa. There are long standing arguments about the issue of aggregation bias and the ecological fallacy (Robinson 1950). These problems are evident looking at some American research. A review of the homicide literature shows that most American studies draw their findings using SMSA (Standard Metropolitan Statistical Area) data. The studies' findings, however, are inconsistent. Blau and Blau (1982) show that characteristics such as income inequality are

positively related to variation in regional homicide rates. Messner (1983) uses similar SMSA data but indicates an opposite finding. Working with these same data, Simpson (1985) finds no support for the argument that criminal violence is a product of greater inequality. Rather, he says, Southerness coupled with factors related to population composition, such as age distributions, have independent effects on all violent crime, including murder.

Bailey (1984) suggests SMSA data yield inconsistent results because researchers are using an inappropriate unit of analysis. He says that cities will better reflect links between poverty and homicide since SMSAs obscure intra-city variations in poverty and income inequality. The unit of analysis selected may have an important influence on the conclusions that are drawn about the effects of social disorganization, inequality, routine activities, and demographic composition in the study of homicide.

Land, McCall and Cohen (1990) review twenty years of American research and suggest that results have been confounded because of differences in the definitions of covariates of homicide rates across units of analysis. Their study solves much of this problem for American research. Nevertheless, questions remain about which unit of analysis to use. Choosing a smaller unit of analysis is not necessarily better as different macrosociological processes may be working at different levels of analysis

(Giddens 1984). The problem shifts to identifying consistencies within a particular social context and to then make comparisons across levels of analysis.

Krahn, Hartnagel, and Gartrell (1986) suggest that cross-national research must be supplemented by detailed historical analysis in different countries to uncover the relationship that structural factors, such as income inequality and social disorganization, can have on violent crime. There has been extensive work on this topic undertaken in the United States. This debate in the U.S. has been influenced, however, by the possible effects of a regional culture of violence which promotes higher levels of homicide in the South than in other parts of the country. Canadian society exhibits regional variations in homicide but does not have a cultural equivalent to a U.S. "Southerness". This study presents a Canadian perspective on intra-national homicide rates.

Previous research on homicide in Canada has used a cross-national perspective with Canadian homicide rates considered as a single case among many countries (Avison and Loring 1986; Krahn et al. 1986), or as a case study where Canada is compared to the U.S.A. (Brantingham and Brantingham 1982). Other researchers have considered intranational variations in Canadian homicide rates looking at metropolitan areas (Kennedy et al. 1989), and provinces (Lenton 1989). Most of this research, however, is

descriptive because small numbers of cases limit the possibility and extent of multivariate analysis. Information also is highly subject to aggregation bias where tables are collapsed into less meaningful categories. For example, Statistics Canada (1988) reports tabular information for urban centres and for some cities with more detailed information provided for metropolitan areas. In many instances it is not possible to compare homicide rates across cities on an annual basis using the printed tables from Statistics Canada. Most recently, Statistics Canada (1990) has failed to print any information on homicide in metropolitan areas in its annual bulletin about *Homicide in Canada*. Using the incident-based data file, many of these problems may be overcome. This data set is in a form that allows homicide rates to be calculated for geographical areas where information was previously suppressed, across a variety of situational variables on a grouped and ungrouped basis, and on an annual basis.

This study will employ data from cities in Canada which have a metropolitan population of 10,000 or greater as enumerated in the 1981 Census. This information is the denominator portion necessary for calculating homicide rates. This includes 85 census agglomerations[5] (CA) having

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[5] The Canadian Census classifies 88 urban areas as CAs. Three CAs, however, are excluded from the analysis because of incomplete information on police homicide statistics:

between 10,000 and 99,999 population, and 24 census metropolitan areas (CMA) having 100,000 or more population. These units of analysis are selected because CAs and CMAs comprise municipalities completely or near entirely within their urban core. Police jurisdictions are matched with municipalities and aggregated into CAs and CMAs. Information on covariates is widely available at this unit of analysis.

Information is available for more extensive analysis of police jurisdictions within larger urban areas (Vancouver for example includes Burnaby, Vancouver, North Vancouver, Surrey, Delta, etc.) but we chose to aggregate this information to the CMA level for two reasons. First, we sacrifice some of the accuracy in classification of where the homicide occurred to gain information on covariates of homicide. Information is available for smaller units, such as municipalities, but as units get smaller Statistics Canada often suppresses low incidence counts within contingency tables or groups data into less meaningful categories. Second, using a CA or CMA boundary rather we lessen the likelihood that the victim lives outside (and also the offender came from outside) the jurisdiction. In large urban areas it is easier to cross a municipal boundary on a daily basis since people commute to work, go downtown

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Carbonear, Newfoundland; Grand Falls, Newfoundland; and Petawawa, Ontario.

to movies, out for dinner, and other activities. Using the aggregate information for the CA or CMA we lose some information but are less likely to entirely misclassify the social characteristics associated with the homicide event.

Overall, using the 1981 CA and CMA definitions, comparable data on urban areas may be derived from the 1971, 1976, and 1981 Canadian Censuses printed summary tables.[6] These data are coded and computer processed yielding a data set containing information on 109 cities in Canada. The population in the 109 cities taken as a group represents 68.2 percent of the Canadian population in 1971, 68.1 percent in 1976, and 69.7 percent in 1981.

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[6] Beginning with the 1981 summary tables, information is drawn on population for cities defined as either Census Metropolitan Areas, or Census Agglomerations. Moving to 1976, comparable information is available for all cities. For 1971, information for many of the CAs is extracted from documents on municipalities of 2,000 population or greater. This often involves adding the data from several small municipalities to estimate the statistic for an agglomerated area. Finally for 1966, it is possible to gather population data for some CMAs on selected variables. The comparability of boundaries for CMAs and CAs however is questionable as data for municipalities is incompletely reported, suppressed due to small counts, or not reported. Thus, the data set includes actual or estimated data for 1971, 1976, and 1981.

4. City Characteristics as Covariates of Homicide

An examination of the homicide literature indicates that a wide range of variables have been used as indicators of social disorganization, inequality, opportunity, and population composition. This study replicates covariates of homicide whenever possible. These covariates of homicide will be operationalized as city characteristics. Table 3.1 lists the variables used in this study and the perspective(s) where they have most often been used as a covariate of homicide.

While each of the variables in Table 3.1 is listed under a single perspective, it is possible to fit each variable into several (and sometimes all) perspectives. For example, social disorganization, inequality, and routine activities theories may include poverty as a concept. There can be differences, however, in the operationalization of variables. For inequality, poverty is a relative concept; for social disorganization, poverty is an absolute; and for routine activities, poverty influences lifestyle through limitations on the types and intensity of activities. Consider, also, population mobility which may be conceptualized as disorganization, where moving disrupts ties bonding persons to the community. Often mobility may be related to family disruption as seen in a high number of lone-parent families. Mobility also is linked to routine activities where moving may enhance opportunities for labour

force participation, and employment as seen in male and female employment patterns. Theoretical overlap also occurs for institutional resources where the police force size represents inequality and opportunity factors. Making the assumption that richer areas may be able to afford greater size of police force, there will be inequalities in levels of service. A larger police force also represents the potential for greater guardianship of the community restricting the opportunities for crime.

Theoretical overlap produces problems for determining which perspective best explains variations in homicide rates. If aspects common to one or more perspectives are found to be related to homicide we will not be able to say which theory is "best" explaining murder in Canada. This study is examining social structural aspects of cities and how they are related to homicide. We are able to estimate the reliability of each of the measures that we use, but we are not able to fully gauge the validity of the measures for each of the perspectives since we do not have information on the causal mechanisms which brought about the social situation. The implications of validity problems for this study are that we may not be able to fully test the explanatory power of a particular theory or the linkages between theories. We will, nonetheless, be able to test whether key aspects of theories are related to murder rates. If we are able to develop reliable measures of key variables

Table 3.1.

Covariates with Homicide for Social Disorganization, Inequality, Routine Activity and Demographic Composition Perspectives.

PERSPECTIVE variable	Census years
SOCIAL DISORGANIZATION	
Population	all
Population Density	all
Population Mobility	1976, 1981
Divorce	all
Lone-parents	1976, 1981
Crime-level	1976, 1981
Absolute Poverty	1971, 1981
INEQUALITY	
Relative Poverty	1971, 1981
Ethnic Heterogeneity	1971, 1981
Linguistic Heterogeneity	all
Police Force Size	1971, 1976
ROUTINE ACTIVITIES	
Labour Force Participation (Male, Female and Total)	all
Unemployment (Male, Female and Total)	all
DEMOGRAPHIC COMPOSITION	
High Risk Age 20-34 (Male, Female and Total)	all
Elderly Population (Male, Female and Total)	all
Sex-ratio	all
Dependency-ratio (Youth, Elderly and Total)	all
CITY SIZE	all
REGIONAL LOCATION	all

we will be able to assess the strengths and weaknesses of each of the perspectives.

The interpretive problems, however, are secondary to developing the models for testing the propositions on homicide. Below, we describe the operationalization of variables. The Canadian Census and Labour Force survey are the major sources of these data.

Population. Population is perhaps the most important variable in the data set because population counts are used to estimate baselines for each of the homicide rates. Considered as an independent variable, total population and density in urban areas can be used as indirect measures of urbanization (Conklin and Simpson 1985). Population (POP71, POP76, POP81) refers to the count of persons within a designated area. Population density (DEN71, DEN76, DEN81) is measured as persons per square mile within an area. Designating comparable units over time is possible, but there are some limitations in the available data. The unit to which all others are compared in this research is the 1981 Census Metropolitan Area where the main labour market area of an urbanized core has 100,000 or more population. Census Agglomerations refer to the main labour market area of an urbanized core having 10,000 to 99,999 population. CMAs and CAs often contain whole municipalities, and must include entire census subdivisions within their boundaries. The inclusion of census subdivisions may significantly

deflate population density for some areas since some subdivisions are large and extend beyond the actual labour market of an area (Statistics Canada 1982). To counter problems in estimating density, the population densities of cities and municipalities may be substituted for the population densities of Census Agglomerations.

Moving from the 1981 to 1976 Census, there is a significant shift in the definition of Census Agglomeration so that CAs represent urban areas having 25,000 to 99,999 population. While the 1976 population is available in the 1981 Census where Statistics Canada adjusts population figures to match the 1981 definition on area boundaries, Statistics Canada does not recompute figures for all variables. A solution is to aggregate the data from small cities having population 5,000 and over with census subdivision information used to estimate the population of CAs. The sum of these aggregations can be verified by comparison to the 1976 adjusted figures.

Moving from the 1976 to the 1971 Census the definitions of CA and CMA are similar. Aggregation of city based information into CAs, however, is more difficult. The 1971 Census reports information only for incorporated towns and cities having 10,000 population and over. To maintain the size of the data set, additional information is gathered through breakdowns in components of census subdivisions. In

some cases many components are used to estimate the population of a census agglomeration.

This process yields a reported or estimated population and population density covering 1971, 1976 and 1981 for each of the CAs and CMAs. The 1971 Census represents the lower end of the temporal framework for this research. An investigation of the 1966 census tables shows that a total population count may be estimated. However, since few of the other variables are available for 1966, this information is not gathered for this project.

Mobility. Mobility is examined through estimated counts of new residents to an area. The 1976 and 1981 Censuses report two types of mobility: the number of migrants and the number of movers. Migrants (MIGR76, MIGR81) are persons who were residing in a different census division, or outside Canada five years earlier. Movers are persons who were living in a different dwelling five years earlier (Statistics Canada 1982). Unfortunately, this information for 1971 is unavailable for CAs and is incomplete for CMAs. Because of these data limitations, population mobility is calculated as the percentage of migrants in urban areas.

Divorce. Divorce is most often examined as a divorce rate per 100,000 marriages. Divorce rate information is available for Canada and the provinces (Vital Statistics 1983), but is not published for cities, CMAs or CAs. An

alternative measure of conflict within marriages is available as indicated by the percent divorced. This measure, however, does not allow discrimination of the recency of divorce status and the possibility of remarriage. Persons divorced in 1971 and still divorced in 1976 and 1981 are counted in the calculation of the percent divorced. The conflict in the marriage relationship may have long been resolved. Still, since divorce counts are the only information available for CAs and CMAs, this study uses the divorce count while noting its limitations. For 1971, the divorce count is imputed as population minus single, widowed, and married with information obtained from census tract bulletins (1973a). Divorce counts for 1976 and 1981 are directly available (Statistics Canada 1977; 1982). The percent divorce (DIV71P, DIV76P, DIV81P) is calculated as 100 times the number divorced divided by the marriage eligible population aged 15 years and over.

Family Structure. Family structure variables are drawn from the Census which reports a classification of census family for husband and wife with or without children, or a lone-parent regardless of marital status where children are present (Statistics Canada 1982). Persons living in a common-law arrangement are considered as now married in the census family tables. The percentage of lone parent families (LOPAR76P, LOPAR81P) in comparison to all census families is

included as a measure for family disruption in 1976 and 1981.

Crime-Level. Crime-level variables include the rate per 100,000 of property (PROP76R, PROP81R) and violent crime (VIOL76R, VIOL81R), and the prior rate of homicide in a city. The crime-level information from police jurisdictions (Statistics Canada 1978; 1982) is aggregated to calculate crime rates for 1976 and 1981 for CAs and CMAs.

Absolute Poverty. A poverty index is not directly reported by Statistics Canada for each of the cities. We work on the assumption that the Canadian poverty line cutoff can be used as an accurate assessment of poverty conditions across the country. We examine income variations across cities calculating a coefficient of deviation of family incomes. The 1971 and 1981 Canadian Censuses report incomes of families and aggregated counts of numbers of families for Canada and cities (Statistics Canada 1975;1982). By comparing the distribution of income in a city to the national average, the influence of income differences is estimated across cities for 1971 and 1981. Absolute income inequality in 1976 is estimated by averaging the 1971 and 1981 coefficients. The computed variable (CVINC71, CVINC76, CVINC81) ranges from -3 to +3 where a higher number indicates a greater degree of poverty in a city in comparison to the Canadian average.

Relative Poverty. Most studies use the Gini coefficient of income inequality as a measure of relative deprivation (Blau and Blau 1982). Using the 1971 and 1981 Canadian Censuses (Statistics Canada 1975;1982) groupings for incomes of families, income distributions are used to calculate the Gini coefficient. The empirical distribution of income categories within a city is compared to an hypothetical situation of equality. The difference between the empirical income distribution and the theoretical distribution for equality is represented by the gini coefficient. The gini coefficient of income inequality is calculated within cities for 1971 and 1981. Relative income inequality in 1976 is estimated by averaging the 1971 and 1981 gini coefficients. The variable (GINI71, GINI76, GINI81) ranges from 0 to +1 where a higher number indicates a greater degree of relative inequality within a city.

Ethnic heterogeneity. The dominant ethnic groups in Canada are of British (including Irish, Scottish, and Welsh) and French extraction, although the proportion of members of this group to the total population has dropped over the years (Krotki and Odynak 1990). Information on British (BRIT71EP, BRIT76EP, BRIT81EP) and French (FREN71EP, FREN76EP, FREN81EP) ethnicity is used to calculate the percentage of ethnic majority groups, and the residual group is used to estimate the percentage of ethnic minority groups (ETH71EP, ETH76EP, ETH81EP). For 1971, the English and

French groups are directly identified (Statistics Canada 1973). For 1981, the census (Statistics Canada 1982) shifts the question on ethnicity to allow multiple responses for ethnic identity. Krotki and Odynak (1990) suggest that working with single-origin ethnic groups will allow comparisons to earlier census information. The single-origin British and single-origin French categories are used to estimate a percentage ethnic majority groups, and then to calculate the percentage of ethnic minority groups. Finally, the percentage ethnic majority and minority groups for urban areas are estimated for 1976 by averaging the percentages from 1971 and 1981.

Linguistic Heterogeneity. Canada is a multi-linguistic country (Hiller 1990). Minority language status (ETH71LP, ETH76LP, ETH81LP) may be assessed by examining the percentage of persons whose mother tongue is neither English (ENGL71LP, ENGL76LP, ENGL81LP) nor French (FREN71LP, FREN76LP, FREN81LP). Mother tongue refers to the first language learned and still understood by an individual (Statistics Canada 1982). This information is available directly from the 1971, 1976 and 1981 Censuses (Statistics Canada 1973;1977;1982).

Institutional Resources. We estimate the relative size of police force (R.C.M.P. or Municipal), as a rate per 100,000 of police officers (POL71R, POL76R, POL81R) in each CA and CMA. Statistics Canada has published information on

police strength in Canada giving breakdowns for larger urban centres in 1976 (Statistics Canada 1978) and for provinces on an annual basis (Statistics Canada 1982). Information from component areas is aggregated to calculate police strength rates in 1976 for CAs and CMAs. Using growth trends in provincial data, this study estimates police strength in urban areas for 1981 on the assumption that police strength in urban areas will grow at the same rate as police strength in the province where the city is located.

Labour Force Activity. Labour force activity refers to whether eligible persons were employed, unemployed, or not in the labour force. The eligible labour force includes the population 15 years of age and over. The census reports information on each of these characteristics of individuals. These definitions did not change over the 1971 to 1981 time period.

Using the census counts for total, male and female (FUE71P, FUE76P, FUE81P) unemployment, a percentage unemployed is calculated for the total labour force (UE71P, UE76P, UE81P), males (MUE71P, MUE76P, MUE81P) and females (FUE71P, FUE76P, FUE81P) by dividing the count for unemployed by the count for persons in the labour force. Labour force participation is estimated by calculating the percentage of the total active labour force (LF71P, LF76P, LF81P), males (MLF71P, MLF76P, MLF81P), and females (FLF71P,

FLF76P, FLF81P) in the labour force by the population of the labour force.

Demographic Composition. Age and sex may be considered as control variables when analyzing the level of violence across jurisdictions. Criminologists typically have focussed on the age group where crime rates are highest. A common assumption is that where there are more males, and especially more young males, there will be a higher level of violence (Deane 1987). We will examine age composition looking at young males aged 20 to 34 years (M2034_71, M2034_76, M2034_81), females (F2034_71, F2034_76, F2034_81) and total population aged 20 to 34 years (T2034_71, T2034_76, T2034_81).

We need not focus exclusively on young males. This study will also explore alternative demographic indices such as the proportion of elderly persons, male (ELDER71M, ELDER76M, ELDER81M), female (ELDER71F, ELDER76F, ELDER81F) and total (ELDER71T, ELDER76T, ELDER81T); sex-ratios (SEXR71, SEXR76, SEXR81); and dependency-ratios for youth (DEP71Y, DEP76Y, DEP81Y), elderly (DEP71E, DEP76E, DEP81E) and total (DEP71T, DEP76T, DEP81T) components to highlight how these features of community structure are related to homicide.

The Canadian Census is the primary source of information on demographic variables. High risk age in American research is usually defined as the level of high

risk offenders: young males aged 15-29 (Messner 1982). The closest available age categories in the Canadian data for urban areas cover ages 20-34 for the entire population, males, and females. Recent research shows low rates of victimization of violent crimes for elderly persons (Statistics Canada 1985). The level of elderly population is measured as the percentage of persons age 65 and over to explore whether there is an inverse relation of homicide with the percentage of elderly persons in urban areas.

The sex ratio is computed as the ratio of males to females within a population. The argument (Daly and Wilson 1988) is that where there is an imbalance toward males that males will be highly competitive and the level of violence is higher.

The dependency ratios are calculated on the assumption that persons of particular ages are not in the labour force and that these persons are dependent for their well being on those persons who are in the labour force. Two groups are considered as dependent: the young (ages 0 to 15), and the elderly (over age 65). The dependency ratios are calculated as 100 times the number of persons in the group (young or elderly) divided by the number of persons age 16 to 64. A total dependency ratio is calculated by summing the youth and elderly components.

Region. Regional trends in homicide rates are explored using a proxy variable in terms of East to West location of

CMAs and CAs. Provinces are used as cutting points with Newfoundland assigned a value of 1 and British Columbia assigned a 10 (Appendix A). This variable (PROVINCE) is subject to similar problems to the North-South proxy variable for the United States (For a discussion, see Huff-Corzine et al. 1986). Researchers may argue that Canada has fewer distinct regions than provinces (Brym 1986) but the homicide trend as East to West remains strong for ten provinces (Kennedy et al. 1988) or five regions (Rae 1981).

City Size. Comparative research on homicide has shown a positive association between the size of the population in a city and the homicide rate in the United States (Jackson 1984) and other societies (Archer et al. 1978). Much of this literature rests on the study of urbanism and homicide rates. Fischer (1980) suggests that greater urbanness leads to a higher heterogeneity of behaviours and elevated levels of crime. American studies have used 25,000; 50,000; 100,000; and 250,000 persons as cutoff points for the designation of large cities (see Jackson 1989). Canada, however, is a much smaller country than the United States having far fewer cities that meet these criteria. Typically, Statistics Canada considers large cities to be metropolitan areas with 100,000 persons or greater. Only about 25 cities in Canada would be classified as large using this criterion. Most cities again fall below a 50,000 person cutoff point. To enable a test of the proposition that city size will

impact on homicide rates, this study selects a cutoff point to maximize the number of cities in the so called "large" city grouping. Dropping the cutoff point to 25,000 persons in 1981 places most of the cities as large, disabling the possibility of comparisons with small cities. The choice then was to designate a population between 25,000 and 50,000 persons. The cutoff point for large versus small city for this study is thus selected based on the following criteria. The CMA designation is rejected as a useful cutoff point since there were only 24 cities in Canada with more than 100,000 persons in 1981. Choosing the CMA designation severely limits the potential for statistical comparisons. Jackson's (1984) 50,000 person population limit is selected as a reasonable choice, but the cutoff point is modified. Working with the 1981 data file, 54 of the 109 cities with 40,000 or more population are designated as large cities. Ten cities fall in the borderline 40,000 to 50,000 range, but are designated as large cities. An advantage of this decision is that the sample is split in half allowing greater potential for statistical tests. A disadvantage is that post hoc designation of population, rather than strict replication at 50,000 persons as a large city, compromises comparisons across studies. An analysis of the city profiles, however, shows that most small cities fall well below a 40,000 or 50,000 person cut-off point, and that cities of 40,000 to 50,000 persons have more characteristics

in common with the large cities. Using 40,000 persons in 1981 as a baseline splits the number of cities is split in half and it turns out that this is the same as using a 25,000 person cutoff in 1971. A dummy variable (CITYSIZE) indicating small versus large cities is computed using the population cutoff point of 40,000 persons as enumerated in the 1981 Census. The validity of this designation may be partially assessed by comparing the results of this study to prior research on CMAs in Canada.

D. METHOD

To facilitate this study a large data base is necessary to engage comparisons. The need to have a large sample, to enable multivariate methods, presents limitations on the types and extent of analysis. To show the influence of situational factors on the form and strength of structural characteristics on homicide, the analysis is replicated within, and compared across the victim and offender relationship. Further, these situational differences are examined using age and sex-standardized rates are produced using the method of indirect standardization. Since city size, regional location, and demographic composition have been described as important contextual determinants of violence, they also provide a basis for comparison. Data analysis is carried out using three techniques: descriptive

statistics, correlation, and regression. Throughout the analysis different time periods are examined to assess any changes in the form and strength of social structural factors throughout the 1970s and into the 1980s. Below is a discussion of the methods used to estimate the age and sex-standardized homicide rates, followed by methods of analysis.

1. Age and sex-standardized Homicide Rates

As explained earlier in this chapter that the total homicide rates, disaggregated along the victim and offender relationship, are estimated using the Williams and Flewelling (1987) method. Homicide victimization rates are calculated in each urban area for the total, family, acquaintance, and stranger homicide. To further assess the degree of risk based on situational factors, the homicide rates are examined taking age and sex differences in propensities for victimization into account. Ideally, the homicide rates would be disaggregated by age and sex using actual counts of victimizations along the nominal parameters. However, homicide is a relatively rare event in Canada and a very rare event in some Canadian cities so that homicides do not occur for each combination of age and sex group on an annual basis. Restricting analysis to the use of actual homicide counts would mean that much of the data

set could not be retained and that multivariate analysis would be severely limited.

A statistical solution to overcome the low incidence counts is available. Demographic techniques, commonly used in mortality and fertility studies (see Shyrock and Siegel 1976), allow an indirect estimation of the homicide rate standardizing it so that it takes into account the effects of age and sex as situational factors influencing violence. Using age and sex population distributions and the incidence of homicide for these groups in Canada, Canada being the baseline for comparison, an estimate of the number of homicide victimizations is calculated for the total number of homicides and along the victim and offender relationship.[7] Equation (3.1) below shows the method of estimation of the number of homicide victimizations for each city (Deane 1987).

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[7] Deane (1987) outlines a method to estimate age and sex-standardized homicide rates for cross-national comparisons. His problem was that age and sex specific rates were unavailable for many countries. In this study, the problem is one where there are few victimizations in cities and the age and sex counts are unstable on an annual (and even five year) basis. This study uses the technique demonstrated by Deane (1987) to estimate homicide rates across cities, rather than cross-nationally.

The number of expected victimizations for each city is the sum of age and sex-specific homicide victimization rates (H) for Canada multiplied by their corresponding age and sex-specific populations (P) in each city. The Canadian age and sex-specific homicide rates for the total rate, and disaggregated along the victim and offender relationship, are directly calculated as a rate per 100,000 drawing homicide counts from the Canadian homicide file using five-year averages for 1967-71, 1972-76, and 1977-81, and Canadian population enumerations as reported in the Census.[5] The age categories for each sex, drawn to correspond with the Census agglomeration areas, are as follows: 0 to 4, 5 to 9, 10 to 14, 15 to 19, 20 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64, 65 to 69, and 70 years or over.

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[5] Using the Canadian homicide data file and population counts for Canada from the Census it is possible to estimate age and sex-specific homicide rates for single-year and five-year age groups on an annual basis (see Forde and Odynak 1990). This degree of information about population, however, is not available for CAs which are used to designate the parameters for many of the Canadian cities in this study.

Using the value from equation (3.1), equation (3.2) provides a ratio of actual homicide victimizations (h) to expected victimizations which estimates the degree of risk for each city (Deane 1987).

$$\text{RATIO of RISK} = h / \Sigma (H_a P_a) \qquad (3.2)$$

In equation (3.3) multiplying this ratio by the "crude" homicide rate (CHR) we obtain a standardized homicide rate (SHR) for each jurisdiction (Deane 1987).

$$\text{SHR} = [\text{RATIO of RISK}] \text{CHR} \qquad (3.3)$$

Note that the SHR is only meaningful for comparisons to homicide rates calculated using this method of standardization. The SHR shows relative differences in homicide victimization across cities in homicide rates when age and sex are taken into account. In sum, this method is used to calculate the relative degree of homicide victimization, disaggregated along the victim and offender relationship, in Canadian cities for 1971, 1976 and 1981. The results of this procedure are presented in chapter 4.

2. Homicide in Canada: Descriptive Measures

The extent, form, and distribution of homicide rates (CHR and SHR) are explored in chapter 4 using descriptive measures of central tendency and dispersion. This chapter is important because it highlights the ways in which the homicide rates may be examined using multivariate methods.

The extent of each of the homicide rates are described using means, medians, and modes. Previous research on homicide in Canada has released information for the nation, provinces, and large cities (see, for example Statistics Canada 1989). This study describes the differences between these sources and the 109 city data set to highlight the strengths and limitations of these urban area data for understanding homicide rates.

Considering the form and distribution of variables, a recent study by Land and associates (1990) has indicated that studies using regression models have inconsistent reports because researchers fail to consider nonlinearity and heteroskedasticity. This study examines the functional form of each variable and makes adjustments where necessary (that is, skewness is corrected using log-transformations). The range and standard deviation for each variable is also reported. The adjusted variables are retained for examination in the multivariate analyses.

These data are also reorganized to consider spatial variations in homicide in Canada. First, city size is

operationalized as a nominal variable: small versus large cities. Profiles are presented for the small and large cities. These descriptions are compared to each other and to the national sample of cities for each time period. The limitations of the city size designation in this study are discussed. Second, the effect of regional context on homicide is reported using breakdowns of the descriptive statistics within and across regions. Finally, age and sex-standardized homicide rates are presented. These standardized homicide rates are discussed in relation to the crude homicide rates.

3. City Characteristics: Descriptive Measures

The extent, form, and distribution of the city characteristics are reported in chapter 5 using descriptive measures of central tendency and dispersion. This chapter highlights the content of the data set for the 109 cities.

The data set is also separated by city size. The features of small and large cities are described. Considering regional differences, there are too few cities in the Western and Atlantic provinces to allow many meaningful descriptive comparisons to cities in Ontario and Quebec (see Appendix A). Regional differences are examined using correlation coefficients.

4. Homicide and City Characteristics: Correlations

The association between homicide rates, disaggregated by victim and offender relationship, and city structure are examined using correlation coefficients. The effects of city size and situational aspects of demographic factors on the association between homicide and city structure are examined by repeating the correlational analysis for small and large cities, and with the age and sex-specific homicide rates. The influence of regional context on homicide rates is explored by introducing a proxy variable for regional location. Each correlation analysis is repeated across time periods.

5. Regression Models

This study uses ordinary least squares (OLS) regression analysis to estimate which situational factors and characteristics of city structure may best explain the observed rates and trends for all cases, family, acquaintance, and stranger homicide. Most previous research has used this method employing cross-sectional regression models (e.g. Williams and Flewelling 1988). This study, however, is somewhat different in that it makes comparisons at several points in time.

The impact of city size is explored by comparing regression models estimated for small cities and large cities to the national sample. The influence of regional

context on homicide is assessed by adding measures of regional location into the regression models as described above. The importance of age and sex-specific factors are assessed by producing age and sex standardized homicide rates and then reestimating the initial regression models. These models are produced for each time period.

When using regression models researchers must be sensitive to the potential problems of reliability and validity of effect coefficients. To a great extent, the issue of reliability of the predictors is contingent upon the accuracy of the Canadian Census and Labour Force survey as they report information about city characteristics. Aggregation bias is less of a problem in the Canadian Census since the Census generally has provided greater detail and accuracy of information than have official statistics for other countries. For example, the Canadian Census provides sex and some age-specific breakdowns on labour force participation. Additional analysis problems, however, will occur depending on how variables are constructed and used in regression models. Regression analysis provides better estimates of effects when the sample size is larger and the predictor variables are independent of each other.

In Canada, researchers have previously not attempted much multivariate analysis because information has been restricted to small samples: ten provinces, or about twenty large cities. Analyses have typically been restricted to

correlations and the presentation of some temporal trends (e.g. Lenton 1989a). American research, on the other hand, overcomes the sample size problem (50 states and about 200 large cities) where regression analyses and time-series models are reported.

American studies, however, have been plagued by a high degree of collinearity amongst their independent variables (see Light 1984; Land et al. 1990). Collinearity, a common problem in aggregate level research, makes it difficult or even impossible to estimate the independent effects of each predictor variable on homicide. For example in a stepwise regression analysis the variables are subject to a partialling fallacy where the order of entry, rather than the unbiased effect size, determines the importance of the variable as a predictor. This study tests the 109 city data set to determine whether collinearity is a problem. The methodological issues will be discussed in greater detail with the presentation of results which follows.

Chapter 4

HOMICIDE IN CANADA: SPATIAL AND TEMPORAL DISTRIBUTIONS

A. INTRODUCTION

Criminologists have noted spatial and temporal variations in homicide rates across rural-urban, regional and demographic groupings. Several studies suggest that large cities tend to have higher crime rates than small cities and the nation as a whole (Archer and Gartner 1984). Research also demonstrates that crime rates are higher in Western Canada than Central and Eastern Canada and that these differences remain relatively constant over time (Rae 1981; Kennedy et al. 1991). While part of the variation in homicide rates reflects differences in the behaviour of offenders and in the number of victimizations, the demographic composition (such as age and sex groupings) within geographical areas may influence the overall level of violence (O'Carroll and Mercy 1989). Much of the research on spatial and temporal patterns in homicide, however, tends to be descriptive or anecdotal.

This chapter presents an overview of spatial and temporal patterns in homicide in Canada. It proceeds in three parts. Part B looks at the national homicide rate as it has varied over time comparing the information in the national homicide data base to previously published listings of homicide rates. Part C illustrates the extent and

variation across space and over time in homicide rates in Canadian cities. Within this section, we examine the influence of city size on homicide rates. Also, we describe the interprovincial differences in homicide rates for the city-based homicide data. Finally in part D we compare the "crude" city-based homicide rates to "age- and sex-standardized" rates. These sections provide the basis for testing propositions on intranational variations in Canadian homicide rates.

B. CANADA'S NATIONAL HOMICIDE RATE

Statistics Canada (1990), until 1990, published an annual statistical profile entitled *Homicide in Canada*.[1] Table 4.1 presents the temporal trend in homicide rates as presented in the statistical abstracts (Statistics Canada 1987) and as calculated for this study using the homicide data base. A major difference in these series is that the rates for each year and the average homicide rate obtained from the published tables (mean=2.19, sd=.64) are slightly higher than those based on the homicide data file (mean=1.73, sd=.54). The reason for these differences is that Statistics Canada's definition of homicide has included

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[1] Formerly called *Murder in Canada*. Publication of *Homicide in Canada* ceased in 1990. Homicide statitics are currently released in *Juristat*.

Table 4.1 Homicide Rates (per 100,000 Population) in Canada: Homicide Data base and Statistical Abstracts, 1961-83

Year	Data base[1]	Abstracts[2]
61	0.96	1.20
62	1.07	1.43
63	1.00	1.32
64	1.03	1.31
65	1.11	1.41
66	1.04	1.25
67	1.15	1.66
68	1.36	1.81
69	1.49	1.86
70	1.62	2.19
71	1.82	2.19
72	1.83	2.39
73	2.02	2.48
74	2.19	2.68
75	2.39	3.09
76	2.40	2.91
77	2.39	3.06
78	2.28	2.82
79	2.21	2.66
80	1.80	2.47
81	2.26	2.66
82	2.17	2.71
83	2.14	2.74

[1] Source: Author's computations.
[2] Source: 1962-83 from Statistics Canada (1987) and 1961 from Lenton (1989).

manslaughter and infanticide which inflates the homicide rates. Further analysis shows that the substantive implications of these differences are marginal for understanding the temporal patterns in homicide. These homicide series data are highly interrelated. Both series have a small standard deviation indicating a low degree of variability in the temporal trend of the national homicide rate. A correlational analysis shows that there is a very strong association between the two homicide series with $r=.99$, $p<.01$. This suggests that murder patterns in Canada, based on the information from the homicide data file, closely follow the trend in homicide in Canada over the 1961 to 1983 time period.

Notwithstanding similarities in the two sources of information about homicide, the major advantages of the homicide data base, as compared to the published tables, are that the data base allows a consistent definition of homicide over the twenty-three years, a detailed separation of homicide victimizations along situational factors, and most importantly an identification of police respondent codes at the city or municipal level. Much of the information on situational factors and homicide is available for Canada and the provinces, but the published tables fail to use a consistent definition of homicide victimization over time. This study, thus, uses the national homicide

data file to calculate baseline information about homicide in Canada.

Figure 4.1 shows the temporal pattern in homicide in Canada controlling for the relationship between the victim and offender. Homicide rates in Canada were at their peak in the mid-1970s. Figure 4.1 illustrates the rising rates in the 1960s and early 70s followed by a decline in rates in the early 1980s.[2] Distinguishing types of homicide based on social relationship indicates that family homicide (averaging 48.2% of the total homicide rate) is the most prevalent type of victimization, followed by acquaintance (30.4%) and stranger (21.4%) victimization. This information provides a basis for comparison of intranational variations in homicide rates.

C. HOMICIDE RATES IN CANADIAN CITIES

This study presents homicide rates for 109 urban areas in Canada (see Appendix B). Statistics Canada publishes comparable information for the CMAs, but not for the smaller urban areas. Descriptive information about the city-level homicide rates across time and disaggregated along the victim and offender relationship is reported in Table 4.2.

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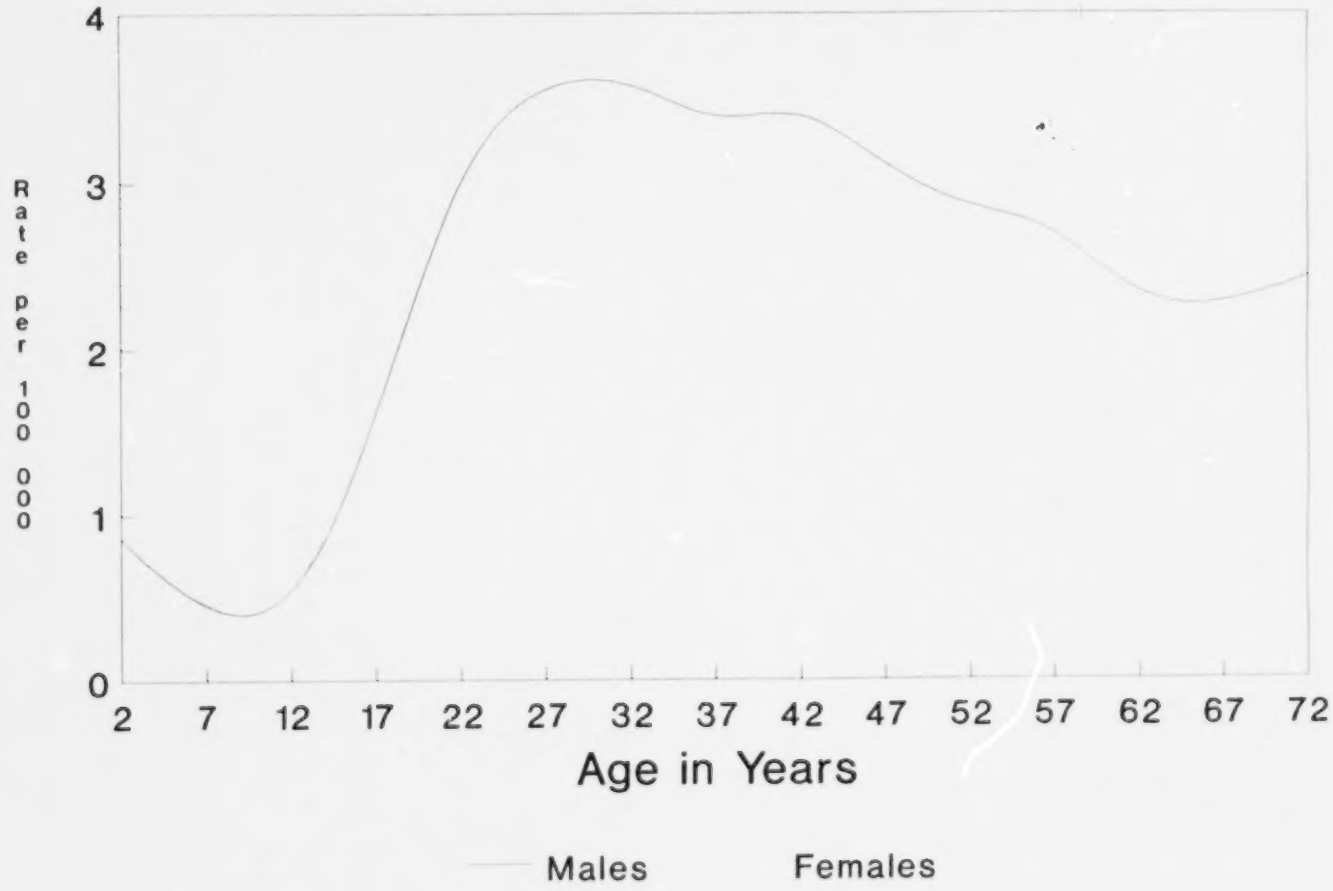
[2] The published tables report a general decline in the homicide rate in Canada up to 1989 (Statistics Canada 1989). The homicide tape, however, is restricted to analyses from 1961-83.

Figure 4.2. Average Age-and Sex-Specific Homicide Rates in Canada 1961-83



Source: Forde and Odynak (1988/89)

Note that this study aggregates the temporal frame, grouped into five-year blocks, of the city-level homicide rates. This information is much more limited in scope than is the national-level information that is available annually. Nevertheless, homicide rates in the 109 city data set follow the national trend.[3]

The mean of the homicide rates, which most studies take as an indication the average, is lowest in 1967-71, highest in 1972-76, and low again in 1977-81. The median is a second, in this instance, and a more accurate measure of the "average" homicide rates. Researchers must remain sensitive to nonlinear distributions in homicide rates (Williams and Flewelling 1988; Land et al. 1990). In Canada for these time periods the distributions of the homicide rates are negatively skewed. A few cities have very high homicide rates compared to the mean homicide rate which statistically biases the representativeness of the mean. A log-

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[3] This information only includes urban areas in the Canadian provinces. There are some cities in the Yukon and Northwest Territories but the police respondent codes are territorial rather than municipal negating the possibility of calculating city-based homicide rates. Note also that these cities have much lower populations than other cities in Canada during the time periods examined in this study. For the reasons listed above, homicide rates for cities in the territories are deemed inappropriate for this study.

Table 4.2 Homicide Rates in Canadian Cities by Victim and Offender Relationship

			1967-71			1972-76			1977-81		
			Median	Mean	S.D.	Median	Mean	S.D.	Median	Mean	S.D.
All Cities N=109		Total	1.13	1.73	1.96	1.94	2.70	4.49	1.59	1.95	1.83
		Family	.67	.99	1.25	.98	1.43	2.99	.62	.81	.97
		Acquaintance	.15	.48	.73	.35	.76	1.61	.49	.70	1.03
		Stranger	.00	.25	.49	.22	.49	.64	.26	.43	.58

transformation of the homicide rates negates this as a problem for the multivariate analysis. The median homicide rates in Table 4.2 suggest that the average homicide rates in Canadian cities are slightly lower that the national homicide rates, but that homicide rates of the cities follow the same temporal patterns as the national rates.

Considering the influence of the victim and offender relationship, disaggregation of the total homicide rate in Table 4.2 illustrates that family homicide is the most common form followed by acquaintance, and then stranger. An analysis of variance (ANOVA) procedure examining the mean homicide rates (lg10 transformed to correct for skewness) shows that there are significant differences, $p<.05$, based on the victim and offender relationship in all time periods. While family based homicides account for the majority of homicide victimizations in all time periods, there is a significant trend towards an increasing ratio of stranger victimizations as compared to the total homicide rate. Using descriptive statistics, the ratio of medians best illustrates this trend as stranger homicide increases from an average of nil in 1967-71, to 11.3% in 1972-76, and further increases to 16.4% of all homicides in 1977-81. These trends for the disaggregated homicide rates in Canadian cities are similar to the trends for Canada as previously shown in Figure 4.1. Family homicide rates are the most prevalent form in all time periods, yet family

homicide declines, absorbing much of the statistical gain of the stranger homicide, as the stranger homicide rates occur at much higher rates in the late 70s and early 80s.

There are several reasons, however, to remain cautious about the identification of trends in the city based homicide rates. With only three time points we have only a very crude estimate of a temporal trend. Nonetheless, these data do replicate the national trend for the highest rates in the early 1970s.

More important than the temporal trends illustrated in Table 4.2 is that there is much statistical variation in the city-level homicide rates. This finding indicates that the Canadian national homicide rate may not reflect levels of violence within Canada, so that it is important to examine intranational variations in homicide in Canada. We will examine two factors, city size and regional location, as explanations for why there are intranational variations in homicide rates in Canada.

1. HOMICIDE IN CANADIAN CITIES: CITY SIZE VARIATIONS

As discussed in Chapter 3, studies linking city size and homicide rates suggest that there is a positive association between the size of the population in a city and the homicide rate. Previous studies also show that crime rates do not necessarily go up as population in a city increases, and that rural areas do not have the lowest

homicide rates (Archer and Gartner 1984). The data for this study allow us to look at population in each urban area as well as distinguishing between small and large cities. This section tests hypothesis 5a which states that large cities will have higher homicide rates than small cities.

A correlational analysis of the entire 109 city data set is used to examine the relationship between overall population in an area and homicide rates controlling for victim and offender relationship. This study finds that there are no significant associations, $p>.05$, between the overall population in an urban area and any of the homicide rates for 1971, 1976, and 1981. These results support Fischer's (1980) argument that population does not explain elevated levels of crime. Below we reexamine the relationship between population and homicide using population as a nominal variable, as explained in Chapter 3, to explore variations in homicide rates based on city size (small versus large).

Descriptive data on the composition of city homicide rates for cities separated based on city size, over time, and disaggregated on the victim and offender relationship is presented in Table 4.3. Looking at the mean as an indicator of average rates we find similar patterns for small and large cities where the total homicide rates both follow the national pattern: homicide rates are lowest in 1967-71, peak in 1972-76, and drop into the 1977-81 time period. Similar

Table 4.3 Homicide Rates in Canadian Cities by Victim and Offender Relationship and City Size

		1967-71			1972-76			1977-81		
		Median	Mean	S.D.	Median	Mean	S.D.	Median	Mean	S.D.
Small Cities N=55	Total	.85	1.62	1.99	1.58	3.00	6.12	1.19	1.72	1.94
	Family	.00	.99	1.37	.89	1.70	4.09	.00	.76	1.25
	Acquaintance	.00	.39	.65	.00	.87	2.19	.00	.62	.95
	Stranger	.00	.24	.59	.00	.45	.75	.00	.32	.65
Large Cities N=54	Total	1.23	1.86	1.96	2.09	2.39	1.67	1.82	2.24	1.92
	Family	.67	1.01	1.17	.99	1.20	1.02	.72	.87	.64
	Acquaintance	.32	.56	.75	.50	.64	.60	.60	.80	1.13
	Stranger	.13	.26	.36	.41	.54	.51	.46	.57	.65

to the total dataset, the distributions of the homicide rates for small and large cities are skewed so that the median may better reflect the average extent of homicide victimization. Compared to large cities, the median homicide rates for small cities are strikingly low. In fact, for most types of homicide the median homicide rate in small cities is zero. Homicide in small cities, even over a five year time period, is a very rare event. Nonetheless, looking at the total homicide rates in 1972-76, small cities have a higher mean homicide rate and a lower median homicide rate suggesting that small cities may be just as dangerous as large cities. An ANOVA is used to test the significance of differences in homicide rates based on city size. In the ANOVA, each homicide rate is log-transformed to correct for skewness.

The ANOVA indicates that the homicide rates are significantly different, $p<.05$, by victim and offender relationship in all time periods, and by population size in 1977-81. The interaction effect of city size by victim and offender relationship is not significant in any time period, $p>.05$. Further analysis of the main effects using t-tests shows that differences are concentrated among the stranger homicides rates. Acquaintance rates, while lower than family homicide rates, are not significantly different in 1972-76 and 1977-81.

Recalling Table 4.3, we may now interpret the means for stranger homicide rates in all cities as significantly lower than the family and acquaintance homicide rates in large and small cities. Observations of the median show a similar pattern, and highlight the fact that small cities tend to have a marginally lower rate than large cities as the median homicide rate in small cities is very often zero. Having a median of zero also highlights the fact that there may be a restriction of variance in the small city data set which will create statistical problems for the ANOVA procedure. Overall, these results provide some support for hypothesis 5a that homicide rates will be higher in large cities. The differences appear to be concentrated in the stranger homicide component and the overall homicide rate for the 1977-81 time period.

2. HOMICIDE IN CANADIAN CITIES: REGIONAL VARIATIONS

As pointed out earlier, previous research on homicide in Canada suggests that rates rise from east to west. This section provides a test of statistical differences based on region among homicide rates and describes this "Wild West" phenomenon. To examine regional trends in homicide the 109 city data set is reorganized based on provincial boundaries (Appendix A).

A correlational analysis of the entire 109 city data set is used to examine the relationship between regional

location and homicide rates controlling for victim and offender relationship. The results of the analysis show that there are weak associations between region and homicide rates.[4] The strength of the associations vary over time and depending upon the victim and offender relationship. Using a correlational analysis, these results provide only weak support for hypothesis 6a where we argued for a temporally invariant east to west pattern in homicide.

Table 4.4 reports the averages for the city-level homicide rates in each province across time and disaggregated along the victim and offender relationship. Note that the results in the table are intended to be exploratory in nature as several of the provinces have only a few cities. Nonetheless, the results from the multivariate analyses (to be presented in Chapter 6) support the following discussion.

The means and medians are presented as measures of the average homicide rate. The median, as with the total data set, is lower than the mean showing that the distributions tend to be positively skewed. Considering the overall homicide rates, the level of murder is lowest in the eastern provinces (Newfoundland, New Brunswick, Prince Edward Island, and Nova Scotia), followed by central Canada (Quebec

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[4] The correlation coefficients are reported with the regression models in Chapter 6 as zero-order coefficients.

Table 4.4 Homicide Rates in Canadian Cities by Victim and Offender Relationship and Province

Province		1967-71			1972-76			1977-81		
		Median	Mean	S.D.	Median	Mean	S.D.	Median	Mean	S.D.
Nfld. Cities N=3	Total	.61	.71	.77	.70	.50	.43	.00	.39	.67
	Family	.46	.41	.38	.14	.31	.42	.00	.17	.29
	Acquaintance	.00	.05	.09	.00	.09	.16	.00	.11	.19
	Stranger	.00	.25	.44	.00	.09	.16	.00	.11	.19
N.B. Cities N=7	Total	1.12	.94	.97	1.80	1.65	.90	1.42	2.17	2.45
	Family	.00	.61	.92	.77	.55	.54	.62	1.32	2.26
	Acquaintance	.00	.28	.60	.00	.34	.59	.41	.53	.57
	Stranger	.00	.05	.14	.77	.76	.68	.00	.32	.51
P.E.I Cities N=2	Total	.71	.71	1.01	.71	.71	1.00	1.56	1.56	1.58
	Family	.71	.71	1.01	.71	.71	1.00	.00	.00	.00
	Acquaintance	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Stranger	.00	.00	.00	.00	.00	.00	1.56	1.56	1.58
N.S. Cities N=6	Total	1.04	1.37	1.56	1.93	1.74	1.37	1.22	1.19	.71
	Family	.78	.78	.71	.84	.97	.84	.52	.42	.31
	Acquaintance	.14	.27	.35	.32	.51	.64	.59	.64	.54
	Stranger	.00	.31	.66	.00	.26	.41	.06	.13	.16
Quebec Cities N=28	Total	.18	.72	1.14	1.92	1.97	1.58	1.34	2.06	2.34
	Family	.00	.35	.53	.86	1.07	1.11	.51	.67	.77
	Acquaintance	.00	.14	.28	.20	.47	.56	.51	1.04	1.72
	Stranger	.00	.22	.62	.08	.40	.49	.12	.34	.43

Table 4.4 Continued.

Province		1967-71 Median	1967-71 Mean	1967-71 S.D.	1972-76 Median	1972-76 Mean	1972-76 S.D.	1977-81 Median	1977-81 Mean	1977-81 S.D.
Ontario Cities N=36	Total	.97	2.01	2.29	1.60	3.58	7.35	1.39	1.58	1.46
	Family	.74	1.23	1.41	.91	2.06	4.94	.67	.84	.96
	Acquaintance	.24	.53	.78	.40	.96	2.51	.23	.36	.46
	Stranger	.00	.25	.47	.23	.52	.66	.67	.38	.44
Manitoba Cities N=4	Total	1.87	1.67	1.23	4.21	4.33	2.56	2.34	1.90	1.32
	Family	.79	.66	.48	1.19	1.35	1.26	.48	.72	.92
	Acquaintance	.75	.64	.49	1.56	1.54	1.38	.96	.98	.83
	Stranger	.26	.37	.47	1.14	1.44	1.60	.00	.19	.38
Sask. Cities N=6	Total	2.32	2.82	2.32	2.57	2.82	2.22	2.82	2.86	1.36
	Family	1.16	1.61	1.49	1.28	1.42	1.02	1.33	1.13	.73
	Acquaintance	.87	.94	.90	.60	.77	.78	1.14	1.02	.87
	Stranger	.16	.26	.32	.53	.62	.71	.52	.72	.88
Alberta Cities N=3	Total	1.37	1.43	.09	2.20	2.17	.49	2.42	2.40	.13
	Family	.42	.43	.43	1.05	1.20	.40	.98	.97	.24
	Acquaintance	.42	.50	.16	.18	.41	.56	.80	.93	.24
	Stranger	.69	.50	.32	.55	.56	.02	.73	.50	.43
B.C. Cities N=14	Total	3.93	3.57	1.89	2.68	3.19	2.23	2.64	2.79	1.94
	Family	1.91	2.02	1.66	1.41	1.60	1.58	1.06	1.00	0.85
	Acquaintance	1.25	1.14	1.04	.87	1.22	1.32	1.04	.98	.71
	Stranger	.00	.33	.49	.00	.38	.49	.41	.74	.86

and Ontario), and highest in Western Canada (Manitoba, Saskatchewan, Alberta, and British Columbia). While this trend is evident in all time periods, there is some variation in the east to west pattern particularly within the western provinces. Some of this variation may be a statistical artifact where the average rate for a province is based on a very small number of cases (e.g. In 1972-76, Manitoba's rate which is based on 6 cities is higher than the B.C. rate which is based on 14 cities). Nevertheless, groupings of cities based on three regions or ten provinces show an east to west pattern with higher levels of murder in the western provinces.

Disaggregation of the total homicide rate along the victim offender relationship and region indicates a strong pattern where family homicides are the most prevalent rate. An exception occurs for P.E.I. in 1977-81, where the stranger rate is highest, but this case is based on very few cities and a small actual number of homicide victimizations. A further statistical problem occurs in Ontario in 1972-76 where a single city causes a moderate increase in the mean family homicide rate and an extreme increase in the standard deviation. Looking at the medians, however, shows that family homicide is the prevalent form of homicide.

Considering the east to west trend in victimizations across regions, there is an inconsistent pattern for family homicide rates. The east-west relationship, however, is

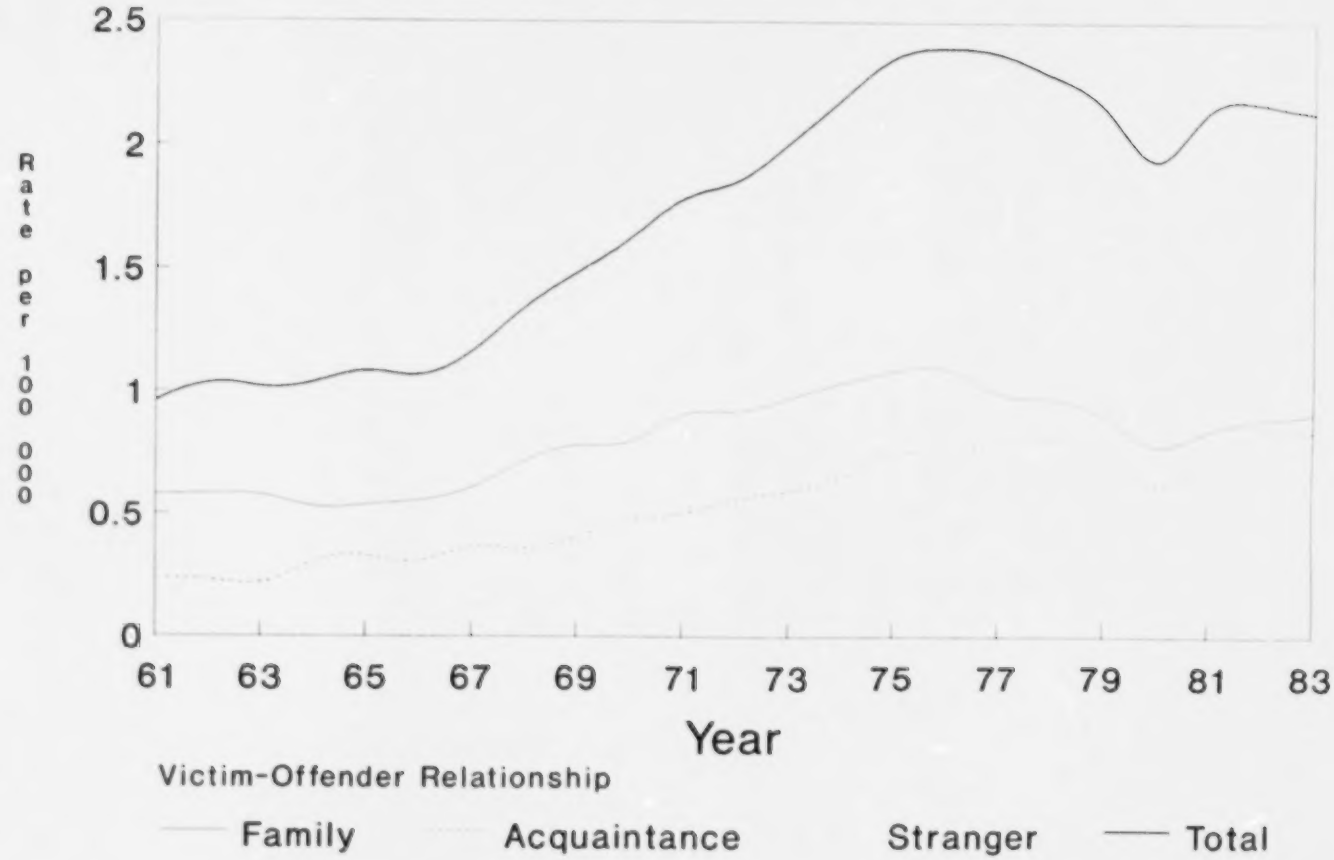
strong for acquaintance, and is very strong for stranger homicides with low victimization rates in the eastern and high rates in the western cities. The reasons for these patterns will be explored further in chapter 6.

D. STANDARDIZED (AGE AND SEX) HOMICIDE RATES IN CANADA

Figure 4.2 shows the average age and sex-specific victimization rates for Canada, based on the Canadian homicide data file. The form of the distribution, also called the age-crime curve (Farrington 1986), is similar for males and females. Generally, young children have the lowest rate of victimization; the victimization rates increase rapidly peaking for young adults; and victimization rates decline through the adult years. Note, however, that adult males are victimized at a much higher rate than that for adult females.

Considering temporal changes in the relationship between age and homicide victimization, Forde et al. (1990) show that the form of the age-crime curve is similar over time but that there are changes in the extent of victimization, particularly with a disproportionate increase in the rates of victimization for elderly persons over the 1970s into the 1980s. Forde and Odynak (1990), using generalized Gompertz curves to statistically assess the age-crime relationship for homicide victimization, report that linear and quadratic components of age may account for much

Figure 4.1 Homicide in Canada by Victim and Offender Relationship, 1961-83



of the variation in homicide rates but that there remains a significant period effect. This suggests that it is not reasonable to assume an invariant relationship between age and homicide victimization over time. The homicide rates will have to be standardized for each time period.

Overall, the fact that there are substantial differences in victimization rates based on age and sex in Canada suggests that the total rates of victimization compared across cities may be misleading as an indicator of the level of murder. Since the extent of victimization also varies over time, the "crude" homicide rates are standardized for each of the time periods using the Canadian age and sex-specific homicide rate in 1971, 1976 and 1981 as a baseline population (see Appendix C).

1. STANDARDIZED HOMICIDE RATES IN CANADIAN CITIES

Standardizing the homicide rates in the Canadian cities controls for the effects of differential risk across particular sex and age groups in a population. The standardized rates for each time period are presented for each of the cities in Appendix D for the total, family, acquaintance, and stranger homicide victimization. Note that unlike the crude rates the family, acquaintance, and stranger rates do not necessarily sum to the total homicide rate because of differences in the ratios (see equation 3.2) used to weight the disaggregated homicide rates. The

standardized total rate is based on the ratio of the actual to estimated victimizations rather than the sum of the disaggregated and standardized homicide rates. Further aggregation bias would be introduced if the total standardized homicide rate is simply presented as a sum of the family, acquaintance and stranger rates. Nonetheless, the components of the homicide rate along the victim and offender relationship may be compared to each other to see their relative contributions to the level of lethal violence in Canadian cities.

Briefly considering appendix D, to indicate the meaning of the standardized homicide rates, the standardized rates may be compared across cities as an estimate of the risk of homicide victimization. For example, the unstandardized total homicide rates for 1977-81 in Chilliwack, British Columbia and Edmonton, Alberta are 8.20 and 2.53 respectively. This suggests that Chilliwack has about 5.7 more murders per 100,000 persons in a year than does Edmonton. The age- and sex-standardized rates of 43.0 and 2.79 serve a different purpose showing the rate of homicide victimization relative to each other and to the overall homicide rate in Canada. Recall that the age and sex-specific victimization rates are used to estimate a predicted rate of homicide victimization in an area when the effects of age and sex composition are removed. We find that Chilliwack has an extremely high rate of victimization

compared to that expected based on its population structure. The standardized total homicide rate for Chilliwack is about 19 times the 1981 National homicide rate of 2.26 and about 15 times the Edmonton homicide rate. This standardization process does not explain why victimization rates are higher (or lower) in certain areas. It is designed to remove the contaminating effects of age and sex composition so that homicide rates may be compared across urban areas. Clearly, differences in age and sex composition are not enough to explain the extremely high risk of homicide victimization in Chilliwack to that in Canada as a whole. In comparison, the standardized rate for Edmonton is only marginally higher (1.2 times) than the national rate. Chapter 6 will explore these differences in greater detail examining the influence of city characteristics on homicide.

Considering overall trends in the standardized homicide victimization rates, table 4.5 shows the average rates in Canadian cities, disaggregated along the victim and offender relationship. Compared to the crude rates, the means for the standardized rates appear to be much higher in all time periods. The higher level of homicide is a general pattern, but the means are somewhat misleading since a few cities have extremely high standardized rates. The rates for these few cities are responsible for much of the increase in the standard deviations of the homicide rates. More

Table 4.5 Age and Sex Standardized Homicide Rates in Canadian Cities by Victim and Offender Relationship

		1967-71			1972-76			1977-81		
		Median	Mean	S.D.	Median	Mean	S.D.	Median	Mean	S.D.
All Cities N=109	Total	.87	4.66	8.78	1.74	12.62	88.29	1.15	3.36	7.55
	Family	.62	3.44	7.23	.96	11.12	87.00	.44	1.84	5.67
	Acquaintance	.06	1.77	4.12	.18	4.63	31.62	.32	2.05	8.36
	Stranger	.00	1.04	3.74	.10	1.37	3.27	.12	1.01	2.87

importantly, the distributions of the standardized homicide rates are now highly skewed. Thus, the medians are a better measure of the central tendency of the distribution of the standardized homicide rates.

Using the medians to assess temporal trends, the results show that the standardized total homicide rates are lowest in the 1967-71 time period, highest in 1972-76, and drop again in 1977-81. These results in Table 4.5 replicate the pattern for the crude rates as shown in Table 4.2.

Disaggregation of the total homicide rate based on the victim and offender relationship the medians indicate that family homicide is the most prevalent form in all time periods. Replicating the patterns for the crude rates, Table 4.5 reports that family rates increases from 1967-71 so that the rates are highest in 1972-76 and finally drops in 1977-81. Both acquaintance and stranger homicide rates increase over time. An ANOVA, using log-transformed rates, shows that these breakdowns along the victim and offender relationship are significant differences, $p<.05$, in the standardized homicide rates in 1971 and 1976, but that unlike the crude rates there are no significant differences in 1981. Further t-tests show that the family rates are significantly different from acquaintance and stranger homicide in the earlier periods. There are no other significant differences based on situational factors.

2. STANDARDIZED HOMICIDE RATES: CITY SIZE VARIATIONS

A correlational analysis of the entire 109 city data set shows that overall population is not related to any of the standardized homicide rates. This replicates the earlier finding that used the unstandardized homicide rates.

Table 4.6 presents the averages of the standardized homicide rates separated by city size. The patterns appear to be similar to those presented in Table 4.3. The primary result of the standardization procedure, however, is that homicide rates no longer vary based on city size. An ANOVA indicates that city size is not significantly related, $p>.05$, to homicide rates. There are significant differences, $p<.05$, in homicide along the victim and offender relationship in 1967-71 and 1972-76, but not 1977-81. Finally, there are no significant interaction effects between city size and the victim and offender relationship. Note, however, that these results must be viewed with caution. A potential problem in ANOVA is that there may be a restriction of variance in the dependent variable. The medians illustrate that both the standardized homicide rates and unstandardized rates are often zero in the small cities. While tentative, based on exploratory procedures, these results suggest that the average standardized homicide rates are not related to city size.

Table 4.6 Age and Sex Standardized Homicide Rates in Canadian Cities by Victim and Offender Relationship and City Size

		1967-71			1972-76			1977-81		
		Median	Mean	S.D.	Median	Mean	S.D.	Median	Mean	S.D.
Small Cities N=55	Total	.50	4.45	7.48	1.21	21.14	124.12	.67	3.05	6.35
	Family	.00	3.81	7.98	.75	19.59	122.36	.00	2.44	7.71
	Acquaintance	.00	1.40	2.68	.00	8.06	44.41	.00	1.68	3.61
	Stranger	.00	1.36	4.91	.00	1.60	4.19	.00	.95	2.48
Large Cities N=54	Total	1.04	4.86	10.00	2.02	3.94	6.08	1.53	3.67	8.66
	Family	.63	3.05	6.43	.99	2.50	4.48	.57	1.24	2.06
	Acquaintance	.24	2.16	5.20	.37	1.16	1.86	.49	2.42	11.35
	Stranger	.06	.71	1.92	.34	1.13	1.95	.38	1.08	3.24

3. STANDARDIZED HOMICIDE RATES: REGIONAL VARIATIONS

Several researchers have argued that part of the east to west pattern in homicide rates in Canada may be explained as an artifact of the age composition of western cities. We may expect that much of the regional pattern in homicide would disappear if homicide rates are standardized based on age and sex. A correlational analysis of the entire 109 city data set examines the relationship between regional location and the standardized homicide rates controlling for victim and offender relationship. The results of the analysis show that much of the association between region and homicide rates disappears. Exceptions are weak to moderate associations of region with acquaintance homicide in 1976, stranger in 1981, and strong associations with total, family and acquaintance homicide in 1971. These results fail to provide support for a temporally invariant east to west pattern in homicide.

Looking at the descriptive information, Table 4.7 illustrates the average standardized homicide rates in cities across provinces, over time, and along the victim and offender relationship. As with Table 4.4, these results are intended as exploratory since there are only a few cities in several of the provinces. Generally, Table 4.7 replicates the patterns in Table 4.4. Again, while the means are presented, the medians are a more representative measure of

Table 4.7 Age and Sex Standardized Homicide Rates in Canadian Cities by Victim and Offender Relationship and Province

Province		1967-71			1972-76			1977-81		
		Median	Mean	S.D.	Median	Mean	S.D.	Median	Mean	S.D.
Nfld.	Total	.26	.64	.89	.23	.18	.16	.00	.21	.37
Cities	Family	.28	.36	.41	.02	.22	.37	.00	.10	.17
N=3	Acquaintance	.00	.02	.03	.00	.04	.07	.00	.05	.09
	Stranger	.00	.68	1.17	.00	.06	.10	.00	.07	.12
N.B.	Total	.87	1.16	1.48	1.52	1.61	1.16	.94	4.6[illegible]	9.06
Cities	Family	.00	1.49	2.98	.60	.56	.61	.44	7.09	17.71
N=7	Acquaintance	.00	.96	2.39	.00	.63	1.08	.22	.77	.96
	Stranger	.00	.07	.17	1.25	2.01	2.42	.00	.59	1.13
P.E.I	Total	.73	.73	1.03	.48	.48	0.68	1.74	1.74	2.33
Cities	Family	1.44	1.44	2.04	1.04	1.04	1.47	.00	.00	.00
N=2	Acquaintance	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Stranger	.00	.00	.00	.00	.00	.00	6.79	6.79	9.09
N.S.	Total	.80	2.67	4.57	1.77	2.19	2.22	.74	.87	.73
Cities	Family	.89	1.43	1.61	.75	1.59	1.97	.31	.31	.32
N=6	Acquaintance	.09	.42	.65	.16	.93	1.76	.48	.91	1.31
	Stranger	.00	1.44	3.48	.00	.43	.71	.01	.07	.11
Quebec	Total	.02	1.20	3.60	1.69	2.86	4.05	.81	4.28	9.70
Cities	Family	.00	.51	1.18	.71	2.31	3.79	.28	1.14	1.93
N=28	Acquaintance	.00	.22	.55	.11	.76	1.16	.34	5.09	16.11
	Stranger	.00	1.44	6.40	.03	.82	1.30	.05	.54	.99

Table 4.7 Continued.

Province		1967-71 Median	1967-71 Mean	1967-71 S.D.	1972-76 Median	1972-76 Mean	1972-76 S.D.	1977-81 Median	1977-81 Mean	1977-81 S.D.
Ontario Cities N=36	Total	.64	6.25	11.88	1.18	30.16	153.29	.90	2.11	5.85
	Family	.75	4.66	8.01	.81	28.54	151.11	.49	1.84	5.51
	Acquaintance	.14	2.09	4.62	.23	10.43	54.78	.07	.46	.94
	Stranger	.00	1.01	2.68	.11	1.41	2.66	.25	.61	1.25
Manitoba Cities N=4	Total	2.26	2.61	2.48	9.94	10.91	10.31	2.57	2.27	1.74
	Family	.90	.79	.68	1.37	3.08	4.39	.52	1.36	2.08
	Acquaintance	1.43	1.28	1.15	4.15	5.56	6.46	1.25	1.96	2.32
	Stranger	.42	.96	1.42	3.91	8.96	13.19	.00	.26	.52
Sask. Cities N=6	Total	3.78	8.49	10.68	3.08	5.69	7.15	3.88	4.53	3.86
	Family	1.91	6.17	9.46	1.67	2.97	3.69	2.04	1.98	1.68
	Acquaintance	2.34	3.71	4.97	.54	1.67	2.22	1.74	2.27	2.39
	Stranger	.16	.49	.66	1.15	1.66	2.08	.97	2.09	3.21
Alberta Cities N=3	Total	1.29	1.37	.17	2.24	2.20	.94	2.70	2.56	.32
	Family	.23	.40	.50	1.06	1.54	1.09	1.08	1.12	.56
	Acquaintance	.42	.63	.43	.05	.53	.87	.76	1.14	.70
	Stranger	1.44	1.03	.85	.61	.64	.06	.94	.66	.58
B.C. Cities N=14	Total	10.27	11.14	8.76	3.41	7.12	10.38	3.16	6.01	10.94
	Family	5.43	9.16	12.11	1.99	4.94	9.95	1.29	2.16	3.51
	Acquaintance	3.63	5.23	6.92	1.24	4.62	7.44	1.44	2.02	2.34
	Stranger	.00	1.09	2.16	.00	.77	1.18	.31	2.86	6.34

the central tendency of the distribution of the homicide rates.

For the total rates, murders generally occur at the lowest rate in the Atlantic provinces for all time periods. Cities in Quebec and Ontario typically have higher rates than cities in Atlantic Canada, but much lower than cities in Western Canada. Nevertheless, there are exceptions to this pattern where a few cities in Quebec and Ontario have very high homicide rates.

Breakdowns of the total homicide rate along the victim and offender relationship typically indicate that family homicide is the most prevalent form in all time periods and for all provinces. Note, however, that in the Western provinces, particularly Manitoba, where lethal violence is highest the acquaintance rates are comparable in magnitude to the family homicide rates. Again, due to the small numbers of cities in the provinces these results must be considered with caution. The case of P.E.I., with only two cities, highlights the potential problems for statistical estimation of rates as the family homicide rate in 1967-71 and the stranger homicide rate in 1977-81 show up as higher than the respective total rates for those periods. The multivariate models examined in chapter 6 will further discuss the issue of regional patterns in the standardized homicide rates.

E. SUMMARY

In summary, this chapter has described the prevalence and types of homicide in Canada. The use of published statistical tables was compared to the national homicide data file. The use of a consistent definition of homicide over time was discussed. Overall the temporal pattern in homicide was identified as peaking in the mid-1970s. Considering disaggregation of the homicide rates along the victim and offender relationship, the results clearly show that there are differences in the prevalence of murder by type and that the rates have changed over time.

Discussion of the city-level data set suggests that the temporal distribution of the city rates appears to follow the same trend as the national homicide rate. Murder rates are lowest in 1967-71, highest in 1972-76, and dropping in 1977-81. Most importantly, this chapter shows that there is much variation in homicide rates in Canadian cities. It is apparent that there may be differences in cities that are leading to a spatial distribution in murder rates.

This chapter has also presented a description of some of the variation in homicide rates illustrating differences based on city size and regional location. These exploratory analyses provide some support for the proposition that homicide varies based on city size, and indicate that homicide tends to follow an east to west pattern of victimization. A standardization of homicide rates based on

age and sex distributions indicates similar temporal patterns to the unadjusted homicide rates. City size differences, however, disappear, and regional disparities in violence are less persistent using the standardized homicide rates.

What are the features of cities that influence the social distribution of murder? To answer this question we will examine the social distribution of characteristics of urban areas. Chapter 5 presents a summary of some of the key features of cities in Canada. Chapter 6 reexamines the connections between homicide, city size, and region in greater detail as the homicide rates from this chapter are linked to the features of Canadian cities that are described in Chapter 5.

Chapter 5

SOCIAL AND STRUCTURAL CHARACTERISTICS OF CANADIAN CITIES

A. INTRODUCTION

The purpose of this chapter is to present a profile of Canadian cities with temporal comparisons illustrated. Analyses of official statistics provide a basis for describing objective characteristics of cities in Canada. The aspects of cities that are expected to influence homicide have been selected, as illustrated in Table 3.1 in Chapter 3, to match key features of social disorganization, inequality, routine activities, and demographic composition perspectives. The data for this study are drawn primarily from the Canadian census (1971, 1976, 1981), police administration statistics (1971, 1976), and justice statistics (1976, 1981). As the 1971, 1976, and 1981 censuses and other sources differ in the scope and definition of variables included, this study uses only those variables which are available in an equivalent way for at least two points in time.

This chapter introduces the covariates of homicide. Part B illustrates a general profile of cities in Canada. The form and distribution of each variable is summarized. The interrelationships of these variables are discussed.

A general profile of cities, however, may in part be misleading due to complex issues, such as, city size and

regional location. Part C addresses the issue of differences in context between small and large cities. Part D discusses the key differences in city context along regional lines.

Basically, a definition of community context is only as good as the data source and types of variables that are used. Attention must be drawn to the limitations of the variables used in this study for an analysis of variations in homicide rates. Part E summarizes the types of weaknesses in the data sets used for this study and the implications of community context for the analysis of homicide.

These city profiles are relatively unimportant taken by themselves; it is through an analysis of the interrelationships of the social and structural variables that we will understand how city context, city size, and regional location are related to variations in homicide rates.

B. COMMUNITY CONTEXT IN CANADIAN CITIES

The city-level data set is compiled from information on 24 CMAs and 85 CAs. These 109 geographical units are hereto referred to as cities. Summary data of the independent variables for the 109 city data set are presented in Table 5.1 and Appendix D.1-3.

In general, the social context of Canadian cities has undergone major changes in population composition, socio-economic standing and labour force participation rates over the periods 1971, 1976, and 1981. The long-term trends in aggregate distributions do not follow a single pattern, where all variables rise or fall, but the trends suggest interdependence of the various factors under study.

Beginning with aspects of social disorganization, Canada's large urban areas (centres of at least 10,000 persons) consisted of about 76 percent of the total population in both 1971 and 1981 (Burke 1990). This suggests that the population in urban areas had the same rate of growth (or decline) as other areas in Canada. Table 5.1 shows that population in Canadian cities grew substantially. The median population in 1971 was 30,000 persons. It increased by 17 percent in 1976 and gained a further 13 percent in 1981 so that the average population of a city was 40,000 persons. Population growth was complemented by an increase in the aggregate urbanization in cities, evident as a twenty percent overall gain from 1971 to 1981 in the median population density. The interrelationship between population and population density is examined using a correlation coefficient. The

Table 5.1. Social and Structural Characteristics of Canadian Cities.

Variable	Year	Median	Mean	S.D.	Minimum	Maximum
Population	1971	29764	134957	382487	9775	2743210
	1976	34829	143620	401920	10276	2803101
	1981	39491	155701	419792	9897	2998974
Density per sq.mi.	1971	213.2	395.6	530.8	1.1	2685.9
	1976	221.3	417.2	557.0	1.2	2838.5
	1981	250.5	460.8	605.8	2.6	3272.7
% Migration	1971	--	--	--	--	--
	1976	23.48	24.09	8.92	3.88	54.95
	1981	20.09	21.30	7.22	6.13	46.08
% Divorced	1971	1.06	1.02	.61	.07	2.70
	1976	1.68	1.69	.58	.51	3.52
	1981	2.68	2.62	.66	1.17	4.31
% Lone parents	1971	--	--	--	--	--
	1976	10.35	10.18	1.70	2.74	15.03
	1981	11.80	11.76	1.89	4.80	16.79
Violent Crime Rate	1971	--	--	--	--	--
	1976	512	572	330	41	1775
	1981	627	686	381	98	2727
Property Crime Rate	1971	--	--	--	--	--
	1976	5044	5108	1889	680	10635
	1981	6336	6673	2294	1721	14665
Income Dissimilarity	1971	-.31	-.33	.72	-3.44	.81
	1976	-.66	-.63	.55	-2.37	.36
	1981	-.96	-.93	.49	-2.27	.17
Gini	1971	.54	.52	.09	.13	.62
	1976	.57	.55	.08	.29	.65
	1981	.60	.58	.12	.11	.75
% British	1971	53.51	48.52	29.82	1.14	95.80
	1976	53.60	48.11	30.05	1.27	95.96
	1981	53.52	47.69	30.39	1.31	96.11
% French (ethnic)	1971	8.57	32.74	37.99	1.15	98.38
	1976	8.38	32.27	37.83	1.24	97.93
	1981	7.51	31.81	38.28	1.32	97.90

... continued.

Table 5.1 continued.

Variable	Year	Median	Mean	S.D.	Minimum	Maximum
% Other (ethnic)	1971	13.08	18.77	17.07	.48	55.88
	1976	13.35	19.62	17.10	.73	53.97
	1981	14.24	19.63	17.07	.52	53.43
% English (mother tongue)	1971	79.18	61.62	35.95	.59	98.93
	1976	81.76	62.94	37.09	.69	99.14
	1981	81.45	62.33	37.03	.73	99.04
% French (mother tongue)	1971	3.83	29.83	39.77	.27	99.27
	1976	3.34	30.08	40.52	.24	99.09
	1981	3.31	30.05	40.65	.23	98.90
% Other (mother tongue)	1971	5.68	8.55	8.45	.13	39.03
	1976	3.97	6.98	6.95	.02	33.81
	1981	5.24	7.62	7.35	.34	33.10
Police per capita	1971	124	120	35	23	204
	1976	137	136	36	25	231
	1981	122	124	38	29	232
% UE (male)	1971	7.70	8.09	3.12	2.60	25.75
	1976	6.30	6.71	2.33	2.33	13.49
	1981	6.52	7.54	3.37	1.92	18.44
% UE (female)	1971	9.70	10.46	4.34	6.40	46.51
	1976	10.17	10.12	3.03	4.01	18.77
	1981	10.82	11.26	4.07	3.63	23.61
% UE (total)	1971	8.51	8.89	3.24	4.13	31.97
	1976	8.07	8.04	2.25	3.53	14.97
	1981	8.36	9.00	3.39	3.22	20.19
% LFP (male)	1971	76.30	75.83	5.79	63.60	95.00
	1976	73.99	73.23	4.52	62.03	88.57
	1981	76.92	77.33	4.17	66.51	89.51
% LFP (female)	1971	39.68	38.82	5.70	24.80	49.44
	1976	43.70	43.67	6.00	29.86	75.96
	1981	50.11	50.12	5.67	37.35	63.91
% LFP (total)	1971	57.50	57.20	5.16	44.75	72.38
	1976	58.21	58.67	4.58	46.93	75.24
	1981	63.37	63.44	4.75	52.35	76.92

... continued.

Table 5.1 continued.

Variable	Year	Median	Mean	S.D.	Minimum	Maximum
% Males 20-34	1971	22.20	22.59	3.80	9.80	43.13
	1976	24.96	25.60	2.87	17.43	37.77
	1981	19.92	20.04	1.52	17.11	28.39
% Females 20-34	1971	21.54	22.02	4.00	9.54	39.09
	1976	24.30	24.86	3.29	19.00	38.45
	1981	19.02	19.36	1.70	16.36	24.67
% Total 20-34	1971	21.82	22.30	3.87	9.67	41.35
	1976	24.48	25.23	3.04	18.26	38.09
	1981	19.47	19.69	1.53	16.92	25.53
% Elderly (Male)	1971	6.73	6.98	2.67	.13	14.11
	1976	7.32	7.61	2.60	.36	14.00
	1981	8.21	8.43	2.67	.59	14.46
% Elderly (Female)	1971	8.91	8.87	3.55	.36	16.95
	1976	10.03	9.87	3.57	.80	20.52
	1981	11.17	11.08	3.52	.74	19.50
% Elderly (Total)	1971	7.70	7.95	3.07	.32	15.15
	1976	8.62	8.77	3.06	.57	17.45
	1981	9.83	9.78	3.08	.75	17.03
Sex Ratio	1971	.98	.99	.06	.89	1.28
	1976	.97	.98	.05	.87	1.14
	1981	.96	.98	.05	.84	1.14
Dependency Ratio (Youth)	1971	45.79	49.90	19.03	37.95	181.77
	1976	38.20	39.11	5.27	29.45	58.53
	1981	33.58	34.02	4.61	19.68	55.88
Dependency Ratio (Elderly)	1971	12.85	12.93	5.17	.50	25.69
	1976	13.11	13.46	5.01	.91	30.42
	1981	14.37	14.63	4.92	1.18	26.41
Dependency Ratio (Total)	1971	59.67	62.83	19.29	50.90	200.29
	1976	52.32	52.57	5.56	40.96	72.69
	1981	48.27	48.65	5.36	32.63	60.32

N=109

association between population[1] and population density[2] is moderately strong at all time periods. Some evidence, however, suggests that the concentration and extent of population growth and urbanization is unevenly distributed among cities. For example, the variability of population and population density is greater across cities in 1981 than in 1976 (or 1971), seen as increases in the standard deviations.

What is it that accounts for the increased size and variability in population and population density? Demographers comparing populations look at factors which will constrain fertility and stabilize mortality (Population Reference Bureau, 1985). Prior studies have shown that birth, fertility, and mortality rates have all decreased in Canada over time (Devereaux 1990); Canada's population is undergoing slow growth. City-level data for these birth, fertility, and mortality rates are not directly available but trends can be inferred by looking at variations in the age and sex distributions and dependency ratios among cities.

Table 5.1 illustrates a shift in age composition in cities. The aggregate percentage of the population of

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[1] Population is log-transformed (base 10) to correct for skewness.

[2] Population density in 1981 is log-transformed (base 10) to correct for skewness.

persons of age 20 to 34 is lowest in 1971, peaks in 1976, and drops in 1981. The peak in 1976 represents the high point of the 1950s baby boom; the drop in 1981 highlights the long-term Canadian trend of an aggregate decrease in birth and fertility rates (see Lachapelle 1990). The standard deviations for persons of age 20 to 34 also follow this trend so that there is much less variability in the percentage of young persons across cities in 1981. Not surprisingly, there are very strong and positive correlations between male, female, and total population of age 20 to 34 cross-sectionally and over time. Large urban areas in Canada, typically, do not have an imbalance in the sex ratio.

A second indicator of change in the distribution of age composition is evident when looking at the percentage of the population that is over age 65. Table 5.1 shows that there is an increase in the average concentration of elderly persons in cities rising from 7.95 percent in 1971 to 8.77 percent in 1976, and to 9.78 percent in 1981. The distribution of elderly persons across cities is similar across time periods as indicated by the standard deviations. Evidence of the influence of the baby boom and the subsequent shift in demographic context is seen in Appendix D.1-3. The correlation between persons of age 20 to 34 and age over 65 is moderate in 1971, peaks as very strong in 1976, and drops to moderate in 1981.

Further indication of a shift in population composition, throughout these time periods, is provided by the aggregate dependency ratios. The mean of the aggregate dependency ratio for the total population drops significantly, but note that it is the youth rather than the elderly component of the ratio that explains this trend. The dependency ratio for the elderly component population increases slightly from 1971 to 1976 and moderately from 1976 to 1981. The correlations between population and the dependency ratios indicate a shift in city context over time. In 1971, population was not related to the dependency ratios. In 1976, there are weak and negative associations between population and the youth and total dependency rates. In 1981, the associations increase in strength to moderate levels. These results suggest a shift in city context where the movement is for larger cities to have lower proportions of young children. Together, the decrease in the dependency ratios for youth and the decrease in the population of persons aged 20 to 34 suggest that the fertility rate has dropped so that the birth rate will contribute significantly less to city population growth. The key components of aggregate population growth, thus, may shift to aggregate mobility and immigration.

Migration in Table 5.1 refers to whether or not a person lived outside of the CMA or CA in the prior census period. This includes persons who have immigrated to Canada

and those who have lived in rural areas or other cities. The average level of migration, about 20 percent of the population in 1981, drops slightly from the level of 1976 (note that these data are only available in 1976 and 1981). This drop occurred in part as a reflection of a lower percentage of immigrants in Canada due to federal restrictions, and also as a lessening of in-migration to large metropolitan areas due to increased economic costs. Multivariate correlations, in Appendix D.2-3, suggests that the overall level of migration is not associated with population size. Migration, however, is clearly related to economic opportunities. Migration patterns are inversely related to unemployment and positively correlated with labour force participation rates. Population composition also is affected by migration as new immigrants are unevenly distributed across cities. Larger urban centres receive a disproportionate share of new immigrants (Badets 1990). Since there are these differences in immigration settlement patterns, we should ask whether this influences city context. Demographic research reports that new immigrants to Canada are settling primarily in urban centres and that this is producing a shift in the ethnic mosaic (Badets 1990). Appendix D.2-3 clearly shows that there are increasingly strong positive associations between minority ethnic status and mother tongue with population over time. Migration,

thus, is influencing city profiles across Canada and over time.

Table 5.1 illustrates how the ethnic composition of Canadian cities has changed substantially since 1971. Many cities are predominantly composed of British or French ethnic groups but other ethnic groups have substantially increased their numbers comparatively, particularly in Western Canadian cities (Balakrishnan 1989). The trend in aggregate linguistic composition is dominated by English as a mother tongue across all time periods while the median level of French drops marginally. The increase in other linguistic groups in 1981 corresponds with the increase in the ethnic population in 1981.

Together the trends in population described above show that population and population density have stabilized along with lower aggregate fertility rates and an increased importance of mobility (primarily immigration). The forces of population change, particularly migration but also fertility and mortality, have created a dynamic environment where the social context of Canadian cities has undergone major changes in age and sex composition, and ethnic and linguistic group concentration.

In addition to changes in population composition, the composition of families, and degree of inequality have shifted the context of cities. The percentage of divorced persons has increased substantially over time, and this has

been accompanied by an increase in the number of lone-parent households. The variation in these trends is evenly distributed across cities. While Table 5.1 reports aggregate trends, the shift in family composition may have an impact on economic inequality. Lone-parent households, particularly where the mother is young, face considerable economic disadvantage (Marcil-Gratton and Legare 1988). In Table 5.1, the Gini coefficient increases over time. This shows that relative economic inequality increased in Canadian cities. The decrease in the index of income dissimilarity, conversely, shows that families in Canadian cities have an increasingly higher absolute income than Canadian families on average.[3] Together, these economic indices illustrate that relative inequality in cities is increasing despite absolute increases in family incomes.

The issue of increasing family incomes is related to changes in labour force participation, perhaps the most substantial change in social context. Table 5.1 illustrates a modest change in overall rates of labour force participation. Male labour force participation rates are relatively constant. Female labour force participation, however, increased dramatically from near 40 percent in 1971

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[3] This analysis focuses only on income as an indicator of social inequality, which is limited since noneconomic trade may contribute to rural well-being. Comparisons, however, for this study are restricted to urban areas.

to about 50 percent of eligible women in 1981. While inversely correlated, the increase in aggregate labour force participation looks to be undeterred by high unemployment rates. Note, again, that these are aggregate trends which may mask compositional differences for certain age and sex groups. Younger persons and females, in particular, face greater economic hardship where labour force participation is higher and un- and under-employment are prevalent (Jones and Tepperman 1988). Overall, the trend toward increases in female unemployment and labour force participation suggest that women are leading more varied work lives in terms of their distribution in the work force.

In general, the picture of city context provided by Table 5.1 and Appendix D.1-3 illustrates a rapidly changing population in terms of age and ethnic composition, a modest increase in economic inequalities accompanied by an absolute increase in economic prosperity, and a rapidly changing work force in terms of gender differences in participation. In this context, violent and property crime rates have increased. Policing, however, seems to run counter-intuitively to an increase in crime rates. Police force size is weakly correlated with crime rates. Also, the aggregate number of police per capita increased in 1976 when property and violent crime rates were lower and police force size drops in 1981 despite an increase in the crime rates.

Repetition of the analysis for small and large cities may better explain this inconsistency.

C. CITY SIZE DIFFERENCES IN COMMUNITY CONTEXT

Ecological theories (Wirth 1938) have emphasized the importance of size, density and heterogeneity as factors which lead to a breakdown in community regulation and social order. Other theories, demographic compositional theory (O'Carroll and Mercy 1989), for example, suggest that it is the composition of the city and not its size, per se, that is leading to elevated levels of crime. This section explores whether there are variations in community context based on differences in city size.

The influence of city size as a contextual factor influencing homicide rates is an understudied phenomena (Archer and Gartner 1984). The distribution of crime and its covariates can be measured using officially designated community-type aggregations such as SMSAs, other cities, and rural counties (Flowers, 1989). As discussed in Chapter 4, most studies of homicide have restricted analyses to large cities of over 50,000 population (Jackson 1989) or to Census Metropolitan Areas of over 100,000 population (Forde et al. 1990b). This study examines small and large cities using a nominal definition of small and large cities. Descriptive trends in variables are examined for each of the new data

sets. In addition, correlational analysis is used to explore associations among the variables.

The small city subgroup is clearly different in context than the large city subgroup along a number of dimensions. These results are presented in Tables 5.2 and 5.3 and Appendix D.4-9.

From Table 5.3, as would be expected, there is a large range in the population of large cities in 1981 going from a low of about forty thousand to a high of nearly three million persons. Table 5.2, conversely, illustrates that there is much less variation in the population of small cities in 1981 beginning at a lower limit of ten thousand and ending at an upper limit of forty thousand persons. The lower limit of population in the large city subset indicates that many of the cities in 1971 and 1976 would fail to meet the definition of large city (population in 1981 greater than 40,000 persons). The 1981 population figure, however, nominally designating cities as large or small is fixed for comparative purposes at all time periods.

Further analysis of population in the large city data set indicates that the distribution is highly skewed in each time period. Population in the small city data set is near normally distributed in each time period. Examination of population density suggests that large cities are different than small cities. Large cities have a significantly higher aggregate population density than small cities.

Correlational analysis confirms that the large city subgroup differs in context from the small city subgroup as population density in the large cities is associated with population but is not related in the small city subgroup. There are no appreciable differences between groups in aggregate population growth.

Considering age composition, small and large cities tend to have about equal numbers of persons age 20 to 34 and over age 65. There is somewhat more variation in the distribution of these populations in small cities as seen in the larger standard deviations for the small city subgroup. Differences in age composition based on city size are most evident when looking at the presence of young children. The average youth dependency ratio is higher in the small city subgroup for all time periods. The interrelationship between youth and elderly populations differ based on city size. There are moderately strong negative correlations between the youth and elderly dependency ratios in the small city subgroup for the 1976 and 1981 time periods, but no significant relations in the large city subgroup. The primary implication of these results is that small cities tend to have a higher percentage of children than large cities. This age composition may influence homicide rates since young children are less likely to be victims and offenders than other age groups (Forde et al. 1990a; Maxfield 1989). Further, since the large city subgroup has

Table 5.2. Social and Structural Characteristics of Small Cities in Canada.

Variable	Year	Median	Mean	S.D.	Minimum	Maximum
Population	1971	17180	19463	7155	9775	35754
	1976	17291	20010	7599	10276	35920
	1981	21901	24357	9144	9897	39491
Density per sq.mi.	1971	113.9	256.1	447.6	1.1	2553.2
	1976	122.4	263.1	448.3	1.2	2629.2
	1981	148.4	286.8	451.1	2.6	2626.4
% Migration	1971	--	--	--	--	--
	1976	22.97	24.92	9.35	9.32	54.95
	1981	19.65	21.07	7.51	9.55	46.08
% Divorced	1971	.85	.81	.53	.07	2.28
	1976	1.42	1.43	.46	.51	2.36
	1981	2.31	2.28	.55	1.17	3.44
% Lone parents	1971	--	--	--	--	--
	1976	10.24	9.90	2.04	2.74	13.92
	1981	11.39	11.38	2.16	4.80	16.64
Violent Crime Rate	1971	--	--	--	--	--
	1976	473	528	341	41	1775
	1981	544	635	439	98	2727
Property Crime Rate	1971	--	--	--	--	--
	1976	4346	4608	1952	680	10000
	1981	5883	5926	2314	1721	12757
Income Dissimilarity	1971	-.45	-.57	.89	-3.44	.81
	1976	-.79	-.82	.63	-2.38	.36
	1981	-1.14	-1.08	.53	-2.27	.17
Gini	1971	.55	.50	.13	.13	.62
	1976	.59	.56	.09	.29	.66
	1981	.64	.61	.10	.17	.75
% British (ethnic)	1971	51.69	46.81	31.84	1.14	95.02
	1976	50.63	46.46	32.14	1.27	94.70
	1981	51.37	46.10	32.60	1.31	94.39
% French (ethnic)	1971	10.25	37.52	39.55	1.74	98.39
	1976	9.86	36.60	39.16	1.84	97.93
	1981	8.75	37.34	40.40	1.33	97.90

... continued.

Table 5.2 continued.

Variable	Year	Median	Mean	S.D.	Minimum	Maximum
% Other (ethnic)	1971	7.39	15.67	16.42	.49	55.88
	1976	10.62	16.95	16.82	.73	50.59
	1981	9.88	16.55	16.67	.52	53.43
% English (mother tongue)	1971	78.88	58.31	38.18	.59	98.92
	1976	83.65	60.03	39.78	.69	99.14
	1981	82.14	59.42	39.65	.72	99.04
% French (mother tongue)	1971	5.20	34.28	41.56	.30	99.27
	1976	4.17	34.96	42.69	.26	99.09
	1981	3.82	34.91	42.82	.23	98.90
% Other (mother tongue)	1971	4.13	7.41	8.94	.13	39.04
	1976	2.33	5.01	6.33	.02	33.81
	1981	2.80	5.67	6.55	.34	33.10
Police per capita	1971	114	114	38	24	204
	1976	127	127	43	25	232
	1981	104	111	42	29	232
% UE (male)	1971	7.80	7.87	2.96	2.60	16.00
	1976	6.31	6.84	2.55	2.33	13.36
	1981	7.45	8.10	3.76	1.92	18.44
% UE (female)	1971	9.50	10.11	2.67	6.40	17.60
	1976	10.44	10.43	3.17	4.01	18.77
	1981	12.25	12.38	4.22	4.35	23.61
% UE (total)	1971	8.56	8.60	2.56	4.14	15.03
	1976	8.31	8.15	2.28	3.67	13.95
	1981	9.17	9.74	3.62	3.69	20.19
% LFP (male)	1971	74.60	74.88	6.51	63.60	95.00
	1976	72.63	72.92	6.48	44.69	88.57
	1981	76.13	76.64	4.41	66.51	89.51
% LFP (female)	1971	36.70	37.04	5.74	24.80	47.10
	1976	42.72	42.71	7.24	27.73	75.96
	1981	49.03	48.56	5.29	37.63	63.91
% LFP (total)	1971	56.55	56.07	5.32	44.75	72.38
	1976	56.98	58.09	5.06	47.06	75.24
	1981	62.22	62.42	4.67	52.38	76.92

... continued.

Table 5.2 continued.

Variable	Year	Median	Mean	S.D.	Minimum	Maximum
% Males 20-34	1971	21.71	22.63	4.44	9.80	43.13
	1976	24.44	25.28	3.42	17.43	37.77
	1981	19.93	20.07	1.60	17.88	28.39
% Females 20-34	1971	20.61	21.98	4.69	9.54	39.09
	1976	23.47	24.54	4.01	19.00	38.45
	1981	19.21	19.41	1.75	16.49	23.63
% Total 20-34	1971	21.13	22.30	4.54	9.67	41.36
	1976	23.95	24.90	3.68	18.26	38.09
	1981	19.49	19.74	1.56	17.19	25.53
% Elderly (male)	1971	6.96	6.92	3.01	.13	13.12
	1976	7.72	7.73	3.06	.35	14.00
	1981	8.82	8.55	3.13	.59	14.40
% Elderly (female)	1971	8.57	8.67	4.23	.36	16.95
	1976	10.03	9.72	4.33	.80	20.52
	1981	11.17	10.93	4.26	.74	18.71
% Elderly (total)	1971	7.69	7.82	3.60	.32	15.15
	1976	9.05	8.75	3.68	.57	17.46
	1981	9.63	9.76	3.69	.75	16.66
Sex Ratio	1971	.98	1.00	.08	.89	1.28
	1976	.97	.99	.06	.89	1.14
	1981	.97	.99	.06	.91	1.14
Dependency Ratio (Youth)	1971	47.28	51.39	19.22	37.95	181.77
	1976	39.88	40.58	6.03	31.39	58.53
	1981	34.67	35.57	5.04	28.23	55.88
Dependency Ratio (Elderly)	1971	12.97	12.80	5.98	.50	25.69
	1976	13.60	13.60	6.06	.91	30.42
	1981	14.32	14.78	5.90	1.18	26.41
Dependency Ratio (Total)	1971	62.12	64.19	18.88	50.95	195.39
	1976	53.82	54.17	6.13	43.81	72.70
	1981	50.43	50.35	5.47	39.47	60.32

N=55

Table 5.3. Social and Structural Characteristics of Large Cities in Canada.

Variable	Year	Median	Mean	S.D.	Minimum	Maximum
Population	1971	83573	252591	519731	17566	2743210
	1976	85707	269520	545079	22541	2803101
	1981	93342	289477	568225	41471	2998974
Density per sq.mi.	1971	369.5	537.7	573.9	5.6	2685.9
	1976	385.6	574.2	614.5	7.0	2838.5
	1981	427.2	638.0	690.7	9.6	3272.7
Migration	1971	--	--	--	--	--
	1976	23.68	23.24	8.46	3.88	42.25
	1981	21.04	21.54	6.99	6.14	36.08
% Divorced	1971	1.28	1.22	.62	.09	2.70
	1976	1.85	1.96	.58	.82	3.53
	1981	2.87	2.96	.58	1.49	4.31
% Lone parents	1971	--	--	--	--	--
	1976	10.38	10.47	1.22	7.87	15.03
	1981	11.89	12.15	1.50	8.03	16.79
Violent Crime Rate	1971	--	--	--	--	--
	1976	556	616	317	206	1688
	1981	679	738	307	352	1890
Property Crime Rate	1971	--	--	--	--	--
	1976	5631	5617	1692	1929	10635
	1981	7209	7433	2025	4140	14665
Income Dissimilarity	1971	-.05	-.09	.36	-.87	.70
	1976	-.36	-.43	.35	-1.25	.20
	1981	-.69	-.77	.40	-1.74	-.05
Gini	1971	.53	.54	.03	.47	.60
	1976	.55	.55	.07	.32	.64
	1981	.56	.57	.13	.11	.69
% British (ethnic)	1971	55.29	50.25	27.81	1.79	95.80
	1976	54.64	49.79	27.97	1.69	95.96
	1981	54.63	49.32	28.16	1.59	96.12
% French (ethnic)	1971	7.86	27.81	35.97	1.15	97.58
	1976	7.47	27.87	36.25	1.24	97.24
	1981	6.78	27.92	36.57	1.32	96.90

... continued.

Table 5.3 continued.

Variable	Year	Median	Mean	S.D.	Minimum	Maximum
% Other (ethnic)	1971	20.05	21.93	17.29	.63	55.12
	1976	21.26	22.35	17.10	1.03	53.97
	1981	22.74	22.76	17.05	1.09	52.83
% English (mother tongue)	1971	79.38	65.00	33.56	1.01	98.93
	1976	81.16	65.91	34.26	.77	97.54
	1981	80.81	65.30	34.27	1.00	98.79
% French (mother tongue)	1971	3.12	25.29	37.70	.27	98.56
	1976	2.61	25.10	37.93	.24	98.76
	1981	2.77	25.10	38.08	.32	98.25
% Other (mother tongue)	1971	8.98	9.71	7.84	.37	24.42
	1976	8.80	8.99	7.03	.25	25.74
	1981	9.67	9.60	7.63	.42	27.39
Police per capita	1971	131	126	30	55	200
	1976	147	146	26	89	217
	1981	136	137	30	63	192
% UE (male)	1971	7.70	8.31	3.29	4.58	25.74
	1976	6.38	6.66	2.15	2.80	13.49
	1981	6.31	6.98	2.84	2.93	14.72
% UE (female)	1971	9.83	10.81	5.56	6.70	46.52
	1976	9.83	9.81	2.88	4.20	17.74
	1981	10.05	10.12	3.60	3.63	20.07
% UE (total)	1971	8.37	9.19	3.81	5.87	31.97
	1976	8.05	7.98	2.22	3.53	14.97
	1981	7.47	8.26	2.98	3.22	16.64
% LFP (male)	1971	77.79	76.79	4.82	65.20	86.30
	1976	75.63	75.09	3.53	62.45	82.60
	1981	77.82	78.02	3.82	66.96	87.28
% LFP (female)	1971	40.36	40.64	5.09	27.50	49.44
	1976	44.20	44.34	4.85	31.25	52.00
	1981	51.21	51.70	5.65	37.35	63.66
% LFP (total)	1971	59.08	58.35	4.76	46.42	66.49
	1976	59.53	59.26	3.99	46.92	66.71
	1981	64.03	64.48	4.65	52.35	75.68

... continued.

Table 5.3 continued.

Variable	Year	Median	Mean	S.D.	Minimum	Maximum
% Males 20-34	1971	23.09	22.55	3.07	10.26	26.85
	1976	26.19	25.94	2.15	21.53	29.63
	1981	19.87	20.00	1.44	17.11	23.94
% Females 20-34	1971	22.75	22.06	3.18	9.68	27.62
	1976	25.53	25.19	2.35	20.61	30.99
	1981	18.96	19.31	1.67	16.36	24.67
% Total 20-34	1971	23.00	22.30	3.10	9.96	26.72
	1976	25.94	25.56	2.20	21.07	29.79
	1981	19.38	19.65	1.50	16.92	24.31
% Elderly (Male)	1971	6.18	7.04	2.28	2.93	14.11
	1976	6.98	7.49	2.06	3.00	13.66
	1981	8.07	8.30	2.11	3.01	14.46
% Elderly (Female)	1971	9.08	9.03	2.71	2.37	16.92
	1976	9.97	10.03	2.61	2.80	17.51
	1981	11.36	11.23	2.60	3.28	19.50
% Elderly (Total)	1971	7.74	8.08	2.46	2.66	15.15
	1976	8.52	8.79	2.30	2.90	15.46
	1981	9.86	9.80	2.32	3.15	17.03
Sex Ratio	1971	.98	.98	.04	.89	1.08
	1976	.97	.97	.04	.87	1.05
	1981	.96	.96	.04	.84	1.05
Dependency Ratio (Youth)	1971	45.58	48.39	18.90	39.20	181.56
	1976	37.46	37.61	3.86	29.45	48.68
	1981	32.13	32.44	3.52	19.68	40.63
Dependency Ratio (Elderly)	1971	12.45	13.05	4.25	4.36	25.44
	1976	12.87	13.32	3.71	4.45	23.86
	1981	14.39	14.47	3.72	4.57	25.85
Dependency Ratio (Total)	1971	58.43	61.44	19.77	50.90	200.29
	1976	50.94	50.94	4.39	40.96	59.67
	1981	46.86	46.91	4.70	32.64	55.52

N=54

a lower proportion of young children, migration may be more important for population growth in the large cities.

The median migration level in the large city subgroup is similar, about twenty percent of the population, in the small and large city subgroups for 1976 and 1981. Several factors may explain this trend. Migration tends to be positively related to labour force participation rates and negatively related to unemployment rates irrespective of city size. Aggregate migration is higher where employment opportunities are greater. Migration, nonetheless, may have an influence on city context. Migration is clearly linked to a changing ethnic composition in Canada, particularly in large cities. The latter factor may lead to a difference in city context based on city size.

Tables 5.2 and 5.3 illustrate that there are substantial differences in the average size of the ethnic populations of small and large cities. The percentage distribution of "other" ethnic groups in the large city subgroup (about 20 percent) is at least twice as much as in the small city subgroup (about 10 percent). In all cities, the percentage of other ethnic groups is increasing over time. A similar pattern is evident for the "other" language category. Further evidence of the marked importance in 1981 of ethnicity in large cities is seen as migration is significantly related to the other ethnic population. Appendix D.4-9 reports correlations between population size,

ethnic population and migration levels. The association between population size and ethnicity is moderate and gains strength in the large city subgroup over time, but is very weak or unrelated in the small city subgroup. These results suggest that settlement patterns of minority ethnic Canadians have resulted in a substantial difference in social context based on city size. Large cities tend to have greater ethnic heterogeneity than do small cities.

Family structure, composition, and inequality also vary by city size. While increasing in the aggregate over time in small and large cities, the percentage of divorced persons and the percentage of lone-parent families are higher in the large city subgroup. The difference in family structure corresponds with changes in family income inequality. Relative differences in the distribution of family income are marginally higher in the small city subset, as evident in the Gini coefficient. The index of income dissimilarity shows that families in the small city subgroup have a higher aggregate family income than families in the large city subgroup. This difference in aggregate family income may be explained as an artifact of more dual earner families in the small city subset. This interpretation is supported by correlational analysis which shows that relative income differences, the Gini coefficient, are moderately correlated with the percentage of lone parent families in the small city subgroup but not

related in the large city subgroup. Absolute differences in family income are negatively correlated with the percentage of lone parents in both small and large city subgroups.

Labour force trends also differ based on city size. Unemployment rates are typically higher and labour force participation rates are generally lower in the small city subgroup. These differences are particularly pronounced looking at rates for females which may also explain the lower percentage of divorced persons and single parents in small cities. Opportunities in the aggregate for females and divorced females in particular may be more restricted in the small city subset.

In summary, there are several substantial differences in city context based on city size. Population and population density are related in large cities but not in small cities. An analysis of population composition suggests that the small cities have a higher percentage of young children than do large cities. Small and large cities differ most in that the large city subset has a greater proportion of other ethnic groups. Family compositions also are different with large cities having a greater concentration of family types and divorced persons. Labour force opportunities in large cities are greater, but this doesn't necessarily lead to a greater absolute family income.

The relation between patterns in crime and changes in city context is elaborated upon by looking at small and large cities. Property and violent crime rates are lower in the small city subset. The number of police per capita is also lower in the small city subset. The interrelationships of these variables show that crime rates are related to the percentage of other ethnic groups in both the small and large city subgroups. The violent crime rate is also negatively correlated to population density in the small city subgroup which may explain its lower victimization rate. Crime rates, however, are not related to police per capita. Policing is positively related to population density in the large city subgroup, is positively associated with absolute inequality in family income in all cities, and negatively related to unemployment in the large city subgroup. These results suggest that policing is related to inequality factors such as capital availability and resource mobilization rather than disorganization factors such as increasing crime rates. Overall, these results suggest that an analysis of city profiles must consider city size as an additional aspect of community context when attempting an explanation of crime rates.

D. REGIONAL DIFFERENCES IN COMMUNITY CONTEXT

Sociological research on regional differences in Canadian society has emphasized the politicization of social

and economic concerns. Specifically, higher levels of economic deprivation and social disorganization have placed regions of Canada in positions of relative social disadvantage (Brym, 1986;1989). This has consequences for all parts of social life, influencing employment, family relations, and public behaviour (Brym, 1989).

This section examines the influence of regional disparities on community context for 109 cities in Canada. Region is operationalized using a proxy variable for province coded east to west (see Appendix A).

There are several characteristics of cities which vary depending on regional location and over time. Unlike the previous sections on the overall characteristics of cities in Canada and city size as a contextual factor, in the interest of space, this section focuses only on the most substantial differences of city characteristics along regional lines. The correlations between city characteristics and provincial location are presented in Appendix E.1-3.

A considerable amount of previous research on regional differences in Canada has focused on cultural aspects such as ethnic and linguistic disparities (Brym 1986). An analysis of city characteristics suggests that ethnicity in cities is distributed along regional lines. First, most cities in Quebec have very high concentrations of persons with a French ethnic background; Second, cities outside

Quebec, particularly in Newfoundland, have high percentages of persons with an English ethnic background. However, it is important to look beyond the distribution of English versus French persons to understand the importance of ethnicity. Ethnic minority groups are considered as ethnic groups other than English or French. Appendix E.1-3 shows strong correlations between province with other ethnic groups and mother tongue other than English or French illustrating a regional trend in ethnic and linguistic concentration. The presence of ethnic and linguistic minority groups in cities rises going from east to west.

Closely tied to ethnicity, Appendix E.1-3 illustrates that there is a strong regional pattern for divorce in Canadian cities. The aggregate percentage of divorced persons rises going from east to west. This may be related to the fact that many French persons in Quebec have traditional ties to the Roman Catholic Church which discourages divorce. The regional pattern for divorce may thus be explained as an artifact of region having strong links with ethnicity.

Inequality in Canadian cities also varies by regional location. The extent of poverty, as compared to the national average, is higher in western cities than in eastern cities with this difference increasing over time. This trend should be interpreted with caution though as it assumes an equal cost of living across Canada. Nonetheless,

other measures of inequality such as labour force opportunities also show a regional disparity. Cities in the Atlantic provinces, Newfoundland in particular, have much higher unemployment rates than elsewhere in Canada over time. Correlational analysis, however, shows that unemployment and migration is also higher for the western cities in 1981. Unemployment may have indirectly led to shifts in population in Canada following the linguistic shifts (specifically with movement of large numbers of English-speaking Quebecers to Ontario) and migrations spurred by economic booms and busts (the most graphic example being the oil boom in Alberta followed by a severe economic downturn in 1981). The high levels of unemployment and a population shift may lead to a decreased sense of economic well-being and a subsequent increase in homicide rates even where the absolute measures of economic inequality, the Gini coefficient, have shown a clear improvement.

In contrast, several aspects of Canadian city data are homogenous. Population and population composition in the 109 city data set does not vary by region, whereas the previous section showed it as a function of city size. On the other hand, ethnicity and linguistic heterogeneity are clearly related to the regional location of cities at each point in time. Kennedy et al. (1991) suggest that once population composition is controlled, the east to west

variations in homicide rates seem to covary with structural differences in the Canadian economy. Population composition is not a factor for the 109 city data set. Appendix E.1-3 shows that property and violent crime rates, nonetheless, do vary by regional location of cities. In moving to a multivariate explanation of homicide rates in Canadian cities, the differences in community context along regional lines confirm suggestions by Kennedy et al. (1991) that inequality factors have greater importance in 1981 among regions of Canada than they did in 1976 or 1971.

E. SUMMARY

The general picture of community context is that several factors change markedly over the periods 1971, 1976 and 1981. Also, there is a high degree of interrelatedness of social disorganization, inequality, opportunity, and demographic features of cities.

The trend for social disorganization factors primarily was an increase in divorce, rise in the number of lone parent households, and an increase in the property and violent crime rates. The interrelationship of these factors was further accentuated when looking at the large city subset.

The patterns for inequality factors saw an increase in relative economic inequality despite increases in absolute

family incomes. Ethnic heterogeneity is highly related to income inequality. These results were most pronounced when taking city size and regional location into consideration.

The shift in opportunity structure in Canada mirrors changes in economic inequality. There is a dramatic rise in female labour force participation and female unemployment rates corresponding with shifts in family incomes, divorce, and lone parent households. City size attenuates these relationships in the larger cities.

The trend in demographic context included the effects of the baby boom to shift the populations of young and elderly persons. A further breakdown by city size shows that large cities tend to have a more constrained age structure than small cities which may lead to a higher level of violence in the large cities.

The results above are primarily descriptive of relations among variables. The interrelatedness or collinearity will be discussed in much greater detail as the study now moves toward multivariate regression models to explore which variables best predict homicide rates in Canadian cities.

Chapter 6

HOMICIDE IN CANADA: LINKS WITH CITY CHARACTERISTICS

Murders occur in Canada on a regular basis. Centre for Justice Statistics demonstrate a steady escalation in the homicide level for the period 1962 to 1977 (See Figure 4.1 in Chapter 4). Homicide rates levelled out during the late-1970s and early-1980s. Today, Canadians, in fact, are somewhat safer from homicide as there has been a modest decline in the murder rate from its peak in the mid-1970s (Statistics Canada 1990). A focus on national-level homicide rates, however, obscures important differences in homicide within Canada. Evidence presented in Chapter 4 illustrates that there are substantial variations in the level and types of homicide across the country and over time. Community characteristics such as city size, regional location, and demographic composition account for some differences but taken alone they do not reveal the reasons for variations in murder rates in Canadian cities.

Looking at murder levels, several issues need to be addressed. First, what may explain why it is that there is such a high variation in city-level murder rates across the country? Second, why is it that homicide rates have changed over time? Results of a Gallup poll completed in 1989 suggest that the Canadian public is generally unaware that Canada's murder rates have declined. Instead, Canadians tend to overestimate the extent of the national crime problem.

Peoples' perceptions of crime and fear of crime for particular cities and in their own neighbourhoods, however, are more accurate (Currie and Rondeau 1989). Canadians are very aware of and concerned about disproportionately high levels of homicide, particularly in "murder" cities like Edmonton (Gallup 1989). Drawing upon recent academic research, which suggests that homicide rates vary depending upon the social and structural context of cities, this chapter fleshes out the details of how city structure may influence murder victimization in Canada.

In the previous chapter, we examined the stability (or lack thereof) of key characteristics of Canadian cities. A description of these variations in city characteristics across Canada and over time is important but the issue is whether the types of homicide vary with respect to the determinants of lethal violence. We want to know whether city characteristics influence the level and type of homicide. That is, does family homicide correlate with factors like divorce which varies among cities and over time? Likewise, does stranger homicide correspond with economic inequality as it varies across the country? What types of variables best explain variations in the murder rates, and are these effects pervasive across types of homicide?

This chapter links information on homicide in Chapter 4 with the materials on city characteristics in Chapter 5. It

explores variations in homicide rates across Canada assessing the independent effects of community structure and controlling for city size, regional variations, and age and sex composition. Temporal differences in homicide rates are assessed by comparing information from 1976 to 1981. The hypotheses developed in Chapter 3 are tested. These multivariate models provide a basis for evaluating the present and future importance of the effects of social and demographic factors on homicide levels.

Cross-sectional regression analyses are used to examine the relationships between disaggregated homicide rates (family, acquaintance, and stranger) and city characteristics in 1976 and 1981. As discussed in Chapter 3, an integrated theory of homicide victimization must take situational factors into account when modelling homicide victimization rates and city characteristics. Central to these tests of the influence of social context and homicide are propositions relating the influence of situational factors as evident in the victim and offender relationship. In evaluating the influence of city characteristics on homicide rates particular attention is given to an elaboration of the impact of city size, region, and demographic context

Given that regression models are used, it is necessary to address some methodological issues. In particular, the number of variables in the regression models (a high number

of variables in relation to the number of cities in the data set) poses potential for collinearity and misidentification of effect coefficients. Earlier in Chapter 5, we illustrated some strong interrelationships among city characteristics such as the link between the youth dependency ratio and the total dependency ratio. Part A of this chapter presents a statistical assessment of collinearity in city characteristics using principal factor analysis. This section also discusses methodological issues which may limit interpretations of the results of the regression models. The chapter proceeds to present the regression models for homicide and its covariates in Canadian cities. Part B examines results for a general model of homicide rates for 1976 and 1981. Part C explores the influence of city size on the patterns in homicide. Part D considers the impact of regional variations on the general model. Finally, part E addresses the issue of differences between a demographically standardized model of homicide rates and a general model of homicide victimization in Canada.

A. COLLINEARITY

Chapter 5 presented a profile of Canadian cities from 1971, 1976 and 1981. Two issues arise for the regression models: collinearity and sample size (see Light 1984; Land et al. 1990). Some city characteristics were shown to be highly interrelated, particularly in the large city data

sets. We saw, for example, that divorce is highly tied to the number of lone-parent households. We would like to know if divorce and/or lone-parenting are key explanatory variables when we examine the homicide rates. Because of the strong ties, and potential collinearity, it may not be possible to identify which variables influence homicide. In addition, since there are only a small number of cities, particularly when the data is split as large versus small, case to variable problems may arise in the regression models. If the variables are collinear and when a large number of variables are used in an analysis, the regression procedure may be limited so that a unique effect coefficient cannot be produced for each variable.

The high degree of interrelatedness among some city characteristics, again, may indicate collinearity. Appendices D.1-9, correlation matrices for the independent variables in this study, contain many coefficients with values higher than .70. High correlations, however, need not necessarily cause a problem for regression analyses. The primary question is whether variables have independent effects that may be used to predict variations in homicide rates. Variables which overlap must either be dropped from further analyses or combined with common variables as an index or factor score. Factor analysis allows a statistical assessment of collinearity.

Principle-component factor analysis (see Fox 1984,

pp.147-153) of the city-level data at each point in time indicates that collinearity is a problem for the regression analyses so that it is not possible to include the entire set of variables in the multivariate analyses. The SPSS/PC+ principal component factor analysis procedure shows data matrices with negative eigenvalues (and non-positive definite data matrices) when using the entire data set for 109 cities in 1971, 1976 and 1981. These results suggest that several of the variables cannot be separated as singular factors. Further, the condition number based on the relative size of the largest to smallest eigenvalue suggests ill-conditioned data matrices so that the OLS regression solutions will be unstable. In an ill conditioned data set the instability in the OLS regression solutions is seen where slopes for the independent variables will over represent the order of entry of variables than the true effects of the variables. The factor analysis, thus, suggests that the number of independent variables must be reduced before the regression analysis.

The rotated factor matrices show very high factor loadings (greater than .90) for the total, male and female designations of variables at all three points in time. In light of the high loadings on factors, a factor score may be produced combining these variables into indices. To ease interpretation of the regression models, however, the data set is initially trimmed selecting the total percent or rate

for a variable from the total, male, and, female designations. One exception to this procedure, however, is the retention of the male component for age 20 to 34 since most studies have considered male propensity to crime as the explanatory aspect of the percentage of young persons in a population. The rotated factor matrix is also used to match several variables as latent constructs. First, the violent crime rate is highly interrelated with the property crime rate. The violent crime rate is retained for the regression models assuming that crimes of assault and robbery have more in common with homicide than do property crimes. Second, ethnicity in general is highly interrelated with linguistic population. Ethnicity is retained as two factors: British and other. French ethnicity is dropped as it has a high negative relation with British ethnicity. Finally, the youth dependency rate and elderly dependency rate are retained. The total dependency rate is dropped since it has a strong positive association with the youth dependency rate. Overall, this process reduces the data sets to 19 independent variables including region and city size. Examination of the reduced factor matrices shows that problems of collinearity are reduced within acceptable levels of tolerance. The data set is now trimmed of redundant variables.

B. MULTIPLE REGRESSION ANALYSIS: BASELINE MODELS

Trends in the form and distribution of homicide rates were reported in Chapter 4. The evidence showed that the homicide rates in the 109 city data sets and in the large and small city data sets are skewed at each time period. The discussion in Chapter 5 also indicated that some of the independent variables are skewed (Population and population density). Therefore, prior to statistical estimation of multivariate analyses, non-linear log-transformation (base 10) of the homicide rate (lg10 [1+homicide rate]; see Williams and Flewelling 1988), population in 1976 and 1981, and population density in 1981 are used to statistically correct for skewness. An examination of the distributions of each of the variables after the log-transformation revealed near normal distributions for the full data set. The regression models are estimated using a forward stepwise[1]

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[1] Stepwise regression models were used so that we could assess which variables, and ultimately which perspective, best explains variations in homicide. A stepwise regression will show the maximum degree of explained variation for a model. The results, nonetheless, should be considered as descriptive of relations among city characteristics and homicide rates since there are small sample sizes. Further caution is required since collinearity among variables was high. Additional analysis shows that the results as presented are reliable as models

procedure with the standardized slopes (β), number of cities (N), and adjusted R^2 reported for each model. Slopes are reported only for variables which contribute to the final models. The stability of these slopes are considered by examining changes as additional variables are added into the model. Substantial changes in the standardized slopes are an additional indication of collinearity problems.[2]

Tables 6.1 and 6.2 report the zero-order correlation coefficients of city characteristics relations with homicide rates disaggregated by the victim and offender relationship for 1972-76 and 1977-81. Generally, the effects of social disorganization, social inequality, criminal opportunity, and demographic composition variables are inconsistent over time and across types of homicide. The effects for each set of variables are described below.

Considering Hypothesis 1, we find little support as the estimated effects of social disorganization variables on

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with forced entry of all variables yielded similar patterns to those reported here.

[2] In a true time-series model we would use the Durbin-Watson test to assess autocorrelation amongst the variables. Since we have not pooled the data sets we will present models with and without the prior homicide rate assessing whether there are substantial changes in the regression coefficients.

homicide are inconsistent over time and amongst the variables. As predicted divorce and violent crime are positively associated with homicide in 1976 and 1981 but the effects are only weak to moderate in strength. Contrary to predictions, the estimated effects of population, density, and migration are unrelated to the total homicide rates in 1976 and 1981. Mixed support is also evident as the effects of poverty on the total homicide rate has the predicted positive association in 1976 but this is not sustained in 1981. A similar point can be made about the effects of lone-parenting as the effect on homicide is found in 1981 but not in 1976.

In hypothesis 2 we argue for a positive relation between inequality and homicide. Only the police force size is significantly related to the total homicide rate in both 1976 and 1981. Other aspects of inequality are unrelated to the total homicide rate at a zero order level at both points in time. These findings generally fail to support hypothesis 2 and suggest that inequality has only a weak direct link with the total homicide rate. These changes over time, nonetheless, in the types of effects of social disorganization and inequality on the total homicide rate are consistent with Canadian research for provinces (Lenton 1989) and metropolitan areas (Kennedy et al. 1991).

Moving to hypothesis 3, which deals with the effects of criminal opportunity and public lifestyles on homicide, the

Table 6.1 Regression Estimates of the Effects of City Characteristics on Homicide Rates Disaggregated by Victim and Offender Relationship for Canadian Cities, 1972-76

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71
POP76 (LG10)	.06			-.01	-.14		.10	.11		.15		
DEN76	-.06	-.22	-.10	-.07	-.15	-.11	-.07	-.21	-.15	.05		
MIGR76P	.08	.16		.01			.13			.08	.17	.23*
DIV76	.23*	.11		.19*	.15	.11	.22*			.03	-.21	-.25
LOPAR76P	.13	.23*		.14	.17	.03	.01		.07	.04	.29*	.32
VIOL76R	.39*	.39*	.31*	.28*	.25*	.25*	.43*	.48*	.33*	.10		
HOM71 (LG10)	.53*		.53*	.46*		.38*	.43*		.34*	.16*		.19*
CVINC76	.23*		-.20*	.13		-.20*	.30*			.24*	.19	.16
GINI76	-.03	-.13		.06			-.10		-.16	-.10		-.11
BRIT76EP	.01	-.25*	-.18*	-.01	-.15	-.21*	.04	-.18*	-.20*	-.02		
ETH76EP	.22*			.15			.26*			.15	.20*	.27*
POL76R	.25*	.21*	.26*	.24*	.20*	.27*	.15			.26*	.14	.18
LFP76P	.19*			.13	.13		.28*	.08	.09	.12		-.16
UE76P	-.10			-.05			-.12			-.11		
M2034_76	.03		.15	-.07			.07			.21*	.21*	.25*
ELDER76P	-.04			.03			-.08			-.13		
DEP76Y	.01			.01			.03			.07		
DEP76E	-.05			.03			-.08			-.13		
R^2 (adj)		.23	.39		.13	.23		.20	.29		.12	.14

* $p < .05$, one-tailed test of significance

N=109

Table 6.2 Regression Estimates of the Effects of City Characteristics on Homicide Rates Disaggregated by Victim and Offender Relationship for Canadian Cities, 1977-81

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76
POP81 (LG10)	.17			.12			.14			.22*		
DEN81 (LG10)	.12			.12		.16*	.06			.20*	.16	.16
MIGR81P	.11	.25*	.20*	.08	.23*		.04			.13	.23*	.25*
DIV81	.25*			.08	-.17		.29*	.20*	.19*	.22*		
LOPAR81P	.20*	.33*	.28*	.08	.29*		.24*	.12	.12	.17*	.22*	.24*
VIOL81R	.19*	.08		.08			.20*	.21*	.19*	.14	.07	.08
HOM76 (LG10)	.37*		.28*	.46*		.47*	.17*		.06	.02		-.10
CVINC81	.16	.26*	.27*	.20*	.34*	.09	.13			.08		
GINI81	-.08			-.15	-.03		-.01			-.07		
BRIT81EP	-.16	-.20*	-.20*	-.14	-.21*	-.12	-.21*	-.21*	-.21*	-.04		
ETH81EP	-.11			.08			.06			.11		
POL81R	.23*	.12		.21*	.10		.16*			.20*	.14	.16
LFP81P	.08	-.39*	-.34*	.10	-.38*		.04			.11		
UE81P	-.11	-.29	-.29*	-.11	-.32*		.04			-.14		
M2034_81	.08			.10			.11			.02		
ELDER81P	-.01			-.06			-.11			.08	.13	.12
DEP81Y	-.19*			-.09			-.17*			-.20*		
DEP81E	.01			-.06			-.13			.07		
R^2 (adj)		.15	.21		.08	.24		.14	.14		.10	.10

* $p < .05$, one-tailed test of significance

N=109

estimated effects of the percent in the labour force and unemployment suggest only weak support. The labour force participation rates are as predicted in 1976 but unsustained in 1981. Unemployment fails to have a significant effect on the total homicide rate at either point in time. While the effects fail to achieve statistical significance they are in the predicted direction. We suggest that the direct effects of criminal opportunity should not be totally ruled out. Note that we are using a weak measure of lifestyle in Canada. American studies use a household activity index to measure lifestyle and this measure may more fully reflect lifestyle variations than our measures. Some may even argue that unemployment and labour force participation better represent inequality variables.

Looking at the direct effects of demographic composition on the total homicide rates we find no support for hypothesis 4. This is somewhat surprising given the attention to the relation between age composition and homicide in the American literature. We do not entirely rule out the effects of age since we are using an older age group which may have aged out of the high risk offending and victimization stage. Canadian census data for cities is published as persons 20 to 34 (20 to 24 plus 25 to 34) rather than the younger 15 to 29 year old group (published in blocks of 5 year age groups) that is commonly examined in American studies.

Hypotheses 1 and 2 also argue that the total homicide rates should be separated along the victim and offender relationship. Hypothesis 1 argues that the effects of social disorganization on homicide should be more pronounced for more intimate relations. Hypothesis 2 proposes that the influence of inequality variables on homicide will be more pervasive for less intimate social relations (strangers). We find, however, that family homicide is only weakly related with divorce and the violent crime rate in 1976 and the police force size in 1976 and 1981. Acquaintance homicide shows significant relations with a mix of social disorganization and inequality variables in 1976 and 1981. Stranger homicide indicates very weak and inconsistent effects over time. Only police force size has a constant, although weak, effect on stranger homicide rates. In 1981, stranger homicide rates shift to positive correlations with population size and density and a negative relation with the youth dependency ratio. The correlational analysis fails to resolve the inconsistencies in the zero-order relations between city characteristics and the total homicide rates in the 109 city data set.

Tables 6.1 and 6.2 also report the baseline cross-sectional regression analyses where each of the independent variables is entered on a stepwise basis. The standardized coefficients are reported. For 1972-76, social and economic inequality variables have stronger and more pervasive

effects on homicide rates. The temporal stability of the effects of social disorganization, inequality, criminal opportunity, and demographic composition is weak. For 1977-81, social disorganization factors have a stronger and more consistent relationship with homicide giving some support to hypothesis 1. The variables, however, differ depending on the victim and offender relationship. Overall, the models account for a very low amount of the variation in homicide rates with the adjusted R^2 ranging from a mere 8 percent of the variation to a maximum of 23 percent.

Revising the models to include the homicide rate from the previous time period, entered along with the other independent variables, allows a relatively easy assessment of the temporal stability of the urban homicide rates. The prior homicide rate includes the effects of each of the independent variables from the prior time frame and is entered as a single covariate.

The evidence in Chapter 4 illustrated that homicide rates are highest in the 1972-76 time period. If homicide rates increase (or decrease) uniformly across cities there would be a strong correlation between the current and prior homicide rates. The zero-order correlation coefficients in tables 6.1 and 6.2 show that the total homicide rates in 1972-76 and 1977-81 are moderately related to the level of homicide in the prior time frame. Disaggregation of homicide along the victim and offender relation produces a

specification so that the strength of the relationship to prior homicide diminishes based on level of intimacy. Family homicide is strongest whereas stranger homicide is weakest in the relation to homicide from the prior time frame. Inclusion of prior homicide in the regression models has the greatest impact on the family homicide models. The patterns and magnitude of effects of the revised models in Tables 6.1 and 6.2 are not substantially different from the initial analysis except for family homicide. For 1977-81, the prior family homicide rate absorbs all of the effects of inequality so that those variables no longer enter as significant predictors of family homicide. The explanatory power of the revised models, indicated by the adjusted R^2, is moderately larger than the initial models. However, the baseline models, again, are only able to explain a small amount of the variation in homicide rates for the 109 city data set.

1. CITY-SIZE AND HOMICIDE[3]

Many studies demonstrate that cities, and large cities in particular, are centres of violence (Barnett and Schwartz 1989). A long standing tradition in sociological research is that population has debilitative effects on social behaviour

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[3] This section draws from Forde, Kennedy, and Silverman (1990).

(e.g. Simmel 1950; Wirth 1938). Comparative research shows that homicide rates in American cities (Jackson 1984) and in other societies (Archer et al. 1978) are positively associated with population size and density. Longitudinal studies, however, indicate that growth in population and an increase in city size does not necessarily lead to an increase in levels of violence and crime (Archer and Gartner 1984). Urbanism, rather than city size, may lead to the production of violence (Kowalski, Faupel, and Starr 1987). The effects of urban living may involve aspects of size, composition, and a higher heterogeneity of behaviours of which all factors may lead to elevated levels of crime (Fischer 1980).

Recall from Chapter 4 that the effect of city size on homicide rates is weak and only partially supports hypothesis 5a. Differences in the magnitude of homicide rates occurred only in 1977-81 and revolved around stranger homicide. This section tests hypothesis 5b exploring the influence of community characteristics on the production of homicide rates controlling for city size. The results of this analysis are compared to the baseline models which were presented in the preceding section.

The effects of urbanism on the homicide rate are examined by splitting the 109 city data set into large versus small city data sets. Tables 6.3 and 6.4 present the regression models for the small cities. Tables 6.5 and 6.6

report the effects of city characteristics on homicide for the large cities.

Among the small cities, few variables have any noteworthy explanatory power. Looking at the zero-order correlation coefficients, the patterns are similar to those in the baseline models but with fewer variables achieving significance. In part, this difference is due to a smaller sample size (N=55 vs. N=109). More likely, however, the patterns in the zero-order correlations for the small cities subgroup may be due to a restriction of variation in homicide rates. Many of the small cities in fact have homicide rates of zero, particularly in 1977-81. Looking at the stranger homicide rates in 1977-81, thus, it is not surprising that no single city characteristic is related to the stranger homicide rates. Stranger homicide rates, nevertheless, vary substantially in small cities over time as shown by non-significant (near zero) correlations of stranger homicide with prior levels.

The small cities regression models provide results very similar to the baseline models. Social and economic inequality variables influence the total homicide rates in 1972-76 but not in 1977-81. Disaggregation of the total homicide rate produces the same patterns as the baseline where acquaintance homicide in 1972-76 and family homicide in 1977-81 are best predicted. The improvement in the models, however, is very minimal in the small city subgroup.

Table 6.3 Regression Estimates of the Effects of City Characteristics on Homicide Rates Disaggregated by Victim and Offender Relationship for Small Canadian Cities, 1972-76

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71
POP76 (LG10)	.05			.04			.09			.01		
DEN76	-.10	-.25		-.02			-.18	-.22	-.19	-.08	-.28	-.27
MIGR76P	.03			-.07			.18			-.01		
DIV76	.18			.10			.29*	.17	.10	-.12	-.31	-.37
LOPAR76P	.20	.53*	.37*	.23*	.27*	.13	.01		.16	.01	.63*	.46*
VIOL76R	.40*	.40*	.29*	.25*	.21*	.28*	.49*	.48*	.34*	.01	-.22	
HOM71 (LG10)	.45*		.43*	.38*		.36*	.40*		.28*	-.01		.20
CVINC76	.23*			.13		-.21*	.33*			.24*	.26	
GINI76	.04	-.26*	-.23*	.14			.03			-.15	-.42*	-.39*
BRIT76EP	-.05	-.22*	-.19	-.12		-.22*	.04	-.33*	-.24*	-.13		
ETH76EP	.23*			.11			.36*			.15	.37*	.41*
POL76R	.32*	.14	.21*	.35*	.30*	.32*	.18			.27*	.11	.22
LFP76P	.18	.31*		.11			.29*	.27*	.27*	.12		
UE76P	-.13			-.10			-.09			.11	-.16	
M2034_76	.09	.13	.23*	.02		.14	.08		.14	.26*	.27*	.53*
ELDER76P	-.08			-.02			-.09			-.17		.28
DEP76Y	.02			-.01			.07			.02		
DEP76E	-.09			-.02	-.15		-.09			-.16		
R^2 (adj)		.30	.40		.16	.21		.33	.36		.22	.22

* $p < .05$, one-tailed test of significance

N=55

Table 6.4 Regression Estimates of the Effects of City Characteristics on Homicide Rates Disaggregated by Victim and Offender Relationship for Small Canadian Cities, 1977-81

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76
POP81 (LG10)	-.06		-.14	-.01			.09			-.20	-.24	-.24
DEN81 (LG10)	-.04			.07			-.07			-.01		
MIGR81P	-.04			-.13			-.03			.12	.21*	.21*
DIV81	.07			-.08	-.26*		.23*	.19	.19	-.03	.29*	.29*
LOPAR81P	.28*	.26*	.24*	.23*	.44*		.26*	.26	.26	.14		
VIOL81R	.13			-.01			.19			.12		
HOM76 (LG10)	.36*		.32*	.54*		.53*	.12		.03	-.01		-.07
CVINC81	.05			.10	.38*		.11	.25*	.25*	-.06		
GINI81	-.01			-.08			.01			.01		
BRIT81EP	-.19			-.25*	-.24	-.29*	-.20			-.01		
ETH81EP	-.03			-.12	-.27	-.29	.01			-.01		
POL81R	.21	.19		.15			.17			.17		
LFP81P	.01			.01			.01			.05		
UE81P	-.02			.02	-.31	-.27*	.07			-.04		
M2034 81	.09			.13			.17	.18	.18	.02		
ELDER81P	.02			-.06			-.11			.05		
DEP81Y	-.11			-.07			-.11			-.05		
DEP81E	.02			-.06			-.12			.05		
R^2 (adj)		.07	.14		.12	.33		.10	.10		.06	.06

* $p < .05$, one-tailed test of significance

N=55

Revising the models to include the prior homicide rate has little impact on the patterns except for family homicide in 1977-81. In that case, family homicide in 1977-81 displaced the effects of divorce and lone-parenting. Overall, these models explain a very small percentage of the variation in homicide in small cities in Canada.

For the large cities, the zero-order correlation coefficients show that few variables are related to the total homicide rates. The patterns are similar to the baseline models but social disorganization variables have a greater influence on homicide in large cities than was evident in the baseline models. Disaggregation of the homicide rates by victim and offender relationship indicates a specification of the model where social disorganization, social and economic inequality, criminal opportunity, and demographic variables each have significant zero-order influences on the large city family homicide rate. The zero-order correlations also show that few independent variables influence the large city acquaintance and stranger homicide rates.

The large city regression models indicate a consistent specification of the total homicide rate with family homicide rate best explained. Different sets of variables, however, explain the variation in family homicide. In 1972-76, divorce is the key explanatory variable while in 1977-81 population mobility, ethnic composition, and labour force

Table 6.5 Regression Estimates of the Effects of City Characteristics on Homicide Rates Disaggregated by Victim and Offender Relationship for Large Canadian Cities, 1972-76

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71
POP76 (LG10)	-.06			-.18			.12			.10		
DEN76	-.09	-.19		-.18	-.23	-.16	-.01			.10		
MIGR76P	.20	.08		.19			.06			.26*	.33*	.43*
DIV76	.29*	.18		.34*	.30*	.29*	.14			.03	-.19	-.27
LOPAR76P	-.11			-.14			-.02			.03		.15
VIOL76R	.37*	.33*		.34*	.22		.32*	.24*		.21	.29*	.15
HOM71 (LG10)	.72*		.71*	.64*		.50*	.51*		.39*	.40*		.37*
CVINC76	.14		-.10	.10			.23			.13		
GINI76	-.17			-.09			-.38*	-.39*	-.42*	.01	.21	
BRIT76EP	-.12		-.11	.21		-.21*	.02	-.20	-.21	.14		
ETH76EP	.20			.23*			.08			.10		
POL76R	-.03			-.11			-.01	-.11		.17	.28*	.17
LFP76P	.22		.22*	.18		.17	.26*			.10		
UE76P	-.06			.03			-.18			-.11		
M2034_76	-.17		.18	-.32	-.21	-.35	.02			.08		
ELDER76P	.06			.16			-.04			-.05		
DEP76Y	.07			.11			.01			.12		
DEP76E	.06			.17			-.05			-.05		
R^2 (adj)		.14	.51		.23	.44		.16	.26		.11	.20

* $p < .05$, one-tailed test of significance

N=54

Table 6.6 Regression Estimates of the Effects of City Characteristics on Homicide Rates Disaggregated by Victim and Offender Relationship for Large Canadian Cities, 1977-81

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76
POP81 (LG10)	-.03	-.18	-.15	-.09	-.29	-.28	-.03			.10		
DEN81 (LG10)	.12	.22	.23	-.03	.16	.16	.12			.27*	.34*	.34*
MIGR81P	.37*	.33*	.32*	.49*	.54*	.54*	.14			.14	.19*	.22*
DIV81	.27*			.09	-.28	-.29	.29*	.19	.19	.25*		
LOPAR81P	-.12			-.44*			.15			.06	.26*	.27*
VIOL81R	.23*	.16		.21			.18	.22*	.15	.06		
HOM76 (LG10)	.42*		.33*	.21*		.02	.27*		.21	-.09		-.09
CVINC81	.17			.30*	.30	.29	.05			.07		
GINI81	-.06			-.16			.07			-.02		
BRIT81EP	-.16	-.19	-.20	.03			-.25*	-.29*	-.28*	-.16	-.18	-.17
ETH81EP	.31*	.39*		.43*	.47*	.47*	.09			.19	.35*	.35*
POL81R	.05			.16			.03			-.02	-.26	-.23
LFP81P	.05	-.31*		.14	-.46*	-.46*	-.01			.05		
UE81P	-.14			-.29*			.08			-.14		
M2034_81	.08	.16		.08	.20	.20	.04			.03		
ELDER81P	-.02			-.06			-.13			.15	.19	.20
DEP81Y	-.11			.10			-.16			-.25		
DEP81E	-.03			-.05			.15			.13		
R^2 (adj)		.22	.24		.41	.40		.12	.14		.16	.15

* $p < .05$, one-tailed test of significance

N=54

participation are related to family homicide rates in large cities. Inclusion of prior homicide improves the explanatory power of the family and total homicide models in 1972-76 but does not markedly influence any of the relations in 1977-81. Overall, the large cities data set provides better models of homicide rates than the baseline models, particularly for the family homicide rates.

Comparing the large cities to the small cities, the effects of city characteristics on homicide rates show specifications for the disaggregated homicide rates. Acquaintance homicide rates are better predicted in the small cities' sample while the family homicide rates are better predicted in the large cities' sample. While different variables predict the same type of homicide in both time periods, the types of significant variables in the 1972-76 and 1977-81 models are, in general, consistent with hypotheses presented in Chapter 3. However, looking at both time frames we see that the influence of the prior homicide rate is much higher for the 1972-76 models. This may account for the higher explained variance in the 1972-76 than the 1977-81 models, and also may explain why fewer variables enter into the 1972-76 regression models. The important result, nevertheless, is that the large cities homicide rates are better explained than the small cities homicide rates by the effects of urban city structure providing strong support for hypothesis 5b.

Considering factors which may explain variations in homicide rates, a comparison of Tables 6.3 and 6.4 to Tables 6.5 and 6.6 clearly lends support to the notion that types of homicide are differentially affected by social structural changes, depending on the relation of the victim to the offender. Family homicide rates appear to be most clearly influenced by both social disorganization and opportunity factors which relate closely to the fate of the individual (i.e., divorce and labour force participation). Stranger rates are more likely affected by general factors of social disorganization and inequality relating to economic condition, such as, ethnicity, and population composition. Stranger homicide rates, however, are not as well explained as family homicide rates. Most importantly, these results suggest that macrosociological explanations of homicide are more appropriate for large cities than small cities.

Considering the effects of city structure on the large cities homicide rates the hypotheses in Chapter 3 that homicide disaggregated by relational distance will be differentially affected by inequality, social disorganization, opportunity, and population composition are partially supported. The effects, however, are not consistent over time.

These findings suggest that researchers can develop models which may explain the variation of homicide rates in large urban areas. Similar to previous research on homicide

in Canada where the largest CMAs and provinces are examined, this study suffers a problem where it neglects a full examination of the causes of homicide in small cities.

2. REGIONAL LOCATION AND HOMICIDE

Research suggests that regional location is a factor related to homicide. Considering all criminal code violations Brantingham and Brantingham (1984:270) assert that "...(t)he interprovincial pattern for total criminal-code offenses known to the police was heavily biased toward western Canada..." Rae (1981) demonstrates the existence of regional patterns in violent crime finding that location in Canada's two most western provinces was a powerful predictor of homicide. Brantingham and Brantingham suggest that the patterns have remained stable for approximately 15 years, and "... that the social and environmental dynamics of criminal events in western Canada are substantially different from those in other regions" (1984:272). In Chapter 4 we illustrated some support for the proposition that homicide rates in Canadian cities rise in a geographical pattern moving from east to west. This section explores the influence of city characteristics on homicide rates controlling for regional location. The results of this analysis are compared to the baseline models.

The effects of this "Wild West" phenomenon in homicide

rates are examined by including a dummy variable for regional location with city characteristics in the regression models. American research by Loftin and Hill (1974) demonstrates regional differences, in tie with cultural differences, disappear when inequality variables are controlled. Note from the discussion in Chapter 3, the effects of a Canadian welfare state, including universal medicare, may negate this predicted disappearance of regional differences in homicide for the Canadian situation. An added factor in Canada is the relationship of structural factors to crime rates over time. Based on provincial data, unemployment varies over time and across region with a generally negative relationship to homicide (Kennedy et al. 1988). At the same time, cities with higher unemployment rates may have greater stability in their population base. However, the unemployed, without access to social welfare payments in Canada, and the under-employed may live in a state of economic insecurity which creates instability in social relations (Krohn 1976), most particularly among young persons (Easterlin and Schapiro 1979). Further, the upheaval brought on by high levels of migration over a period of time and the opportunity for comparison of relative disadvantage in resource allocation can lead to violent encounters, a point reinforced by the work of Williams and Flewelling

(1988).[4]

Hypothesis 6b proposes that the effect of regional location on homicide is expected to disappear once social disorganization, inequality, criminal opportunity, and demographic composition are controlled in the analysis. Further, the above relationships should vary across time.

Tables 6.7 and 6.8 report the effects of city characteristics and region on homicide rates for the full 109 city data set. Hypothesis 6a is partially supported. The zero-order correlation coefficients demonstrate a weak association between region (east to west) and homicide rates. The effects of region, however, are substantially diminished when each of the independent variables are simultaneously entered as predictors of the homicide rates. Revising the model to include the homicide rate from the previous time frame, entered along with the other independent variables, negates the effects of region in nearly all of the models. Region remains as a significant predictor of the total homicide rate in 1977-81 but this model explains a mere 21 percent of the variation in the

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[4] Of course, a strong counter argument concerning the tension encountered in cities has been offered particularly in the work of Fischer (1975). However, his arguments address the issue related to absolute size of cities versus rural areas and not to the rapid growth factors which lead to the loss of social bonds that we are addressing here.

Table 6.7 Regression Estimates of the Effects of City Characteristics and Region on Homicide Rates Disaggregated by Victim and Offender Relationship for Canadian Cities, 1972-76

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71
POP76 (LG10)	.06			-.01			.10	.12		.15		
DEN76	-.06	-.26	-.15	-.07	-.21	-.11	-.07	-.22	-.15	.05		
MIGR76P	.08			.01			.13*			.08	.17	.23*
DIV76	.23*			.19*		.11	.22*			.03	-.23*	-.27*
LOPAR76P	.13	.30*	.16	.14	.20*	.03	.01		.08	.04	.30*	.32*
VIOL76R	.39*	.33*	.28*	.28*	.22*	.25*	.43*	.44*	.32*	.10		
HOM71 (LG10)	.53*		.49*	.46*		.38*	.46*		.33*	.16*		.19*
REGION	.27*	.22*	.11	.21*	.15	-.01	.25*	.11	.04	.04	.04	.05
CVINC76	.23*		-.19*	.13		-.20*	.30*			.24*	.19	.15
GINI76	-.03	-.12	.13	.06			-.10		-.16	-.10		-.11
BRIT76EP	.01	-.12	-.17*	-.01	-.11	-.21*	.04	-.16*	-.19*	-.02		
ETH76EP	.22*			.15*			.26*			.15	.19	.25*
POL76R	.25*	.16*	.25*	.24*	.19*	.27*	.15			.26*	.14	.18*
LFP76P	.19*	.13		.13	.14		.28*	.09	.10	.12		-.15
UE76P	-.10			-.05			-.12			-.11		
M2034_76	.03	.14	.19	-.07			.07			.21*	.21*	.26*
ELDER76P	-.04			.03			-.08			-.13		
DEP76Y	.01			.01			.03			.07		
DEP76E	-.05			.03			-.08			-.13		
R^2 (adj)		.25	.40		.14	.22		.20	.29		.11	.14

* $p < .05$, one-tailed test of significance

N=109

Table 6.8 Regression Estimates of the Effects of City Characteristics and Region on Homicide Rates Disaggregated by Victim and Offender Relationship for Canadian Cities, 1977-81

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76
POP81 (LG10)	.17			.12		.06•	.14			.22•		
DEN81 (LG10)	.12		.15	.12	.10		.06			.20•	.16	.16
MIGR81P	.11	.12		.08			.04			.13	.18	.20•
DIV81	.25•			.08	-.17		.29•	.17•	.16	.22•		
LOPAR81P	.20•	.28•	.14	.08	.17		.24•	.15	.15	.17•	.24•	.25•
VIOL81R	.19•			.08			.20•	.19•	.16	.14	.03	.04
HOM76 (LG10)	.37•		.31•	.46•		.43•	.17•		.06	.02		-.09
REGION	.28•	.33•	.33•	.19•	.32•	.08	.19•	.06	.06	.20•	.13	.12
CVINC81	.16			.20•			.13			.08		
GINI81	-.08			-.15	-.16	-.11	-.01			-.07		
BRIT81EP	-.16	-.10	-.05	-.14	-.11	-.17	-.21•	-.20•	-.20•	-.04		
ETH81EP	-.11	-.06	-.11	.08			.06			.10		
POL81R	.23•			.21•	.10		.16•			.20•	.12	.14
LFP81P	.08			.10			.04			.11		
UE81P	-.11			-.11			.04			-.14		
M2034 81	.08		.08	.10			.11			.02		
ELDER81P	-.01			-.06			-.09			.08	.09	.09
DEP81Y	-.19•			-.09			-.17•			-.20•		
DEP81E	.01			-.06			-.13			.07		
R^2 (adj)		.13	.21		.07	.22		.14	.13		.10	.10

• $p < .05$, one-tailed test of significance

N=109

total homicide rate.

The previous section on city size and homicide demonstrated that city characteristics better predicted variations in homicide rates in large cities. Tables 6.9 and 6.10 report the additional effect of regional location for small cities in 1972-76 and 1977-81. Tables 6.11 and 6.12 present the models for large cities.

In small cities, regional location is only weakly correlated with the total and acquaintance homicide rates in 1972-76. Regional differences, however, only enter as a significant predictor of homicide rates for the total homicide rates in 1977-81. These models explain a marginal 12 and 14 percent of the variation in the small cities total homicide rates.

In large cities, the zero-order correlations demonstrate that regional location is associated with homicide rates particularly for family homicide. Adding region into the regression models, the analyses demonstrate a positive but weak association between region and the total and family murder rates in 1972-76. Further examination of results when the prior homicide rate is included show that region is not related to homicide rates in any of the models.

The effect of regional location for large cities is no longer significantly related to the homicide rate, but the effects of inequality and social disorganization on homicide

Table 6.9 Regression Estimates of the Effects of City Characteristics and Region on Homicide Rates Disaggregated by Victim and Offender Relationship for Small Canadian Cities, 1972-76

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71
POP76 (LG10)	.05			.04			.09			.01		
DEN76	-.10	-.23		-.02			-.18	-.22	-.19	-.08	-.28	-.27
MIGR76P	.03			-.07			.18			-.01		
DIV76	.18			.10			.29*	.17	.10	-.12	-.31*	-.37*
LOPAR76P	.20	.53*	.37*	.23*	.27*	.13	.01		.16	.01	.63*	.46*
VIOL76R	.40*	.35*	.29*	.25*	.21*	.28*	.49*	.48*	.34*	.01	-.22	
HOM71 (LG10)	.45*		.43*	.38*		.36*	.40*		.28*	-.01		.20
REGION	.25*	.12	.02	.13	.09	-.09	.32*	-.05	-.01	.03	.01	.10
CVINC76	.23*			.13		-.21*	.33*			.24*	.26	
GINI76	.04	-.24*	-.23*	.14			.03			-.15	-.42*	-.39*
BRIT76EP	-.05	-.17*	-.19	-.12		-.22*	.04	-.33*	-.24*	-.13		
ETH76EP	.23*			.11			.36*			.15	.37*	.41*
POL76R	.32*	.15	.21*	.35*	.30*	.32*	.18			.27*	.11	.22
LFP76P	.18	.26		.11			.29*	.27*	.27*	.12		
UE76P	-.13			-.10			-.09			.11	-.16	
M2034_76	.09	.20	.23*	.02		.14	.08		.14	.26*	.27*	.53*
ELDER76P	-.08			-.02			-.09			-.17		.28
DEP76Y	.02			-.01			.07			.02		
DEP76E	-.09			-.02	-.15		-.09			-.16		
R^2 (adj)		.29	.40		.16	.21		.33	.36		.22	.22

* $p < .05$, one-tailed test of significance

N=55

Table 6.10 Regression Estimates of the Effects of City Characteristics and Region on Homicide Rates Disaggregated by Victim and Offender Relationship for Small Canadian Cities, 1977-81

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76
POP81 (LG10)	-.06		-.16	-.01			.09			-.20	-.24	-.24
DEN81 (LG10)	-.04			.07			-.07			-.01		
MIGR81P	-.04			-.13			-.03			.12	.21*	.21*
DIV81	.07	.21		-.08	-.26*		.23*	.19	.19	-.03	.29*	.29*
LOPAR81P	.28*	.41*	.24*	.23*	.44*		.26*	.26	.26	.14		
VIOL81R	.13			-.01			.19			.12		-.07
HOM76 (LG10)	.36*		.29*	.54*		.53*	.12		.03	-.01		
REGION	.18	.37*	.27*	.02	.07	.01	.16	.10	.10	.14	.15	.15
CVINC81	.05			.10	.38*	-.09	.11	.25*	.25*	-.06		
GINI81	-.01			-.08			.01			.01		
BRIT81EP	-.19			-.25*	-.24	-.28*	-.20			-.01		
ETH81EP	-.03	-.27	-.21	-.12	-.27*	-.29*	.01			-.01		
POL81R	.21	.18		.15			.17			.17		
LFP81P	.01			.01			.01			.05		
UE81P	-.02	-.17		.02	-.31	-.26	.07			-.04		
M2034_81	.09			.13			.17	.18	.18	.02		
ELDER81P	.02			-.06			-.11			.05		
DEP81Y	-.11			-.07			-.11			-.05		
DEP81E	.02			-.06	.17		-.12			.05		
R^2 (adj)		.12	.16		.12	.33		.10	.10		.06	.06

* $p < .05$, one-tailed test of significance

N=55

vary from time to time. The models are essentially the same as those presented in the earlier section with the family homicide rate best explained. For 1972-76, region displaces the effects of divorce on family homicide and does not substantially improve the fit of the model. For 1977-81, region absorbs much of the effect of differences in ethnic composition and labour force participation. The effect coefficients remain in the predicted direction but are diminished in magnitude. Overall, region fails to explain additional variation in the 1977-81 family homicide rates in large cities.

The patterns and magnitude of effects of the revised models in Tables 6.9 to 6.12 are not substantially different from the initial analyses. Regional location is, typically, unrelated to homicide rates controlling for social disorganization, inequality, criminal opportunity and demographic composition.

This study finds that regional variations in homicide rates are an artifact of the social structural distribution of city characteristics in Canada. As argued in hypothesis 6b, there is a convergence in murder rates between eastern, central, and western Canada in areas where there are higher levels of inequality and social disorganization. Consistent with findings reported for Census Metropolitan Areas (Kennedy et al. 1991) these results, as predicted, are not consistent over time.

Table 6.11 Regression Estimates of the Effects of City Characteristics and Region on Homicide Rates Disaggregated by Victim and Offender Relationship for Large Canadian Cities, 1972-76

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71
POP76 (LG10)	-.06			-.18			.12			.10		
DEN76	-.09	-.19		-.18	-.24	-.16	-.01			.10		
MIGR76P	.20*			.19			.06			.26*	.34*	.43*
DIV76	.29*			.34		.29*	.14			.03	-.12	-.25
LOPAR76P	-.11			-.14			-.02			.03		.14
VIOL76R	.37*	.33*		.34	.17		.32*	.21		.21	.31*	.15
HOM71 (LG10)	.72*		.70*	.64*		.50*	.51*		.38*	.40*		.37*
REGION	.31*	.22*	.02	.36*	.24*	.01	.15	.07	.03	.02	-.11	-.03
CVINC76	.14		-.11	.10			.23			.13		
GINI76	-.17			-.09			-.38*	-.40*	-.42*	.01	.22	
BRIT76EP	-.12		-.11	.21		-.21	.02	-.19	-.21	.14		
ETH76EP	.20			.23*			.08			.10		
POL76R	-.03			-.11			.01	-.11		.17	.27*	.17
LFP76P	.22		.22*	.18	.20	.17	.26*			.10		
UE76P	-.06			.03			-.18			-.11		
M2034_76	-.17		-.18	-.32*	-.23	-.36	.02			.08		
ELDER76P	.06			.16			-.04			-.05		
DEP76Y	.07			.11			.01			.12		
DEP76E	.06			.17			-.05			-.05		
R^2 (adj)		.16	.50		.21	.43		.14	.25		.09	.18

* $p < .05$, one-tailed test of significance

N=54

Table 6.12 Regression Estimates of the Effects of City Characteristics and Region on Homicide Rates Disaggregated by Victim and Offender Relationship for Large Canadian Cities, 1977-81

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76
POP81 (LG10)	-.03	-.20	-.26	-.09			-.03			.10		
DEN81 (LG10)	.12	.24	.33*	-.03			.12			.27*	.35*	.34*
MIGR81P	.37*	.39*	.37*	.49*	.49*	.50*	.14			.14	.25	.29
DIV81	.27*			.09	-.39*	-.41*	.29*	.21	.20	.25*		
LOPAR81P	-.12			-.44*			.15			.06	.26	.28*
VIOL81R	.23*	.17		.21			.18	.23*	.16	.06		
HOM76 (LG10)	.38*		.31*	.21		.01	.27*		.21*	-.09		-.10
REGION	.42*	-.11	.19	.49*	.29	-.31	.19	.02	.02	.23*	-.11	-.14
CVINC81	.17			.30*	-.16		.05			.07		
GINI81	-.06			-.16			.07			-.02		
BRIT81EP	-.16	-.22	-.24*	.03			-.25*	-.29*	-.28	-.16	-.21	-.20
ETH81EP	.31*	.46*	.50*	.43*	.27	.29	.09			.19	.42*	.42*
POL81R	.05			.16			.03			-.02	-.27	-.25
LFP81P	.05	-.32*	-.26	.14	-.37*	-.36*	-.01			.05		
UE81P	-.14			-.29*			.08			-.14		
M2034_81	.08	.15		.08	.23*	.22*	.04			.03		
ELDER81P	-.02			-.06			-.13			.15	.21	.21
DEP81Y	-.11			.10			-.16			-.25		
DEP81E	-.03			-.05			.15			.13		
R^2 (adj)		.21	.29		.40	.39		.10	.12		.14	.13

* $p < .05$, one-tailed test of significance

N=54

This result may be a consequence of high levels of unemployment and migration throughout Canada in 1981 compared to 1976. In partial support for hypothesis 1, the effect of social disorganization on the total homicide rate is evident for 1977-81 but not for 1972-76. Migration in 1981 is positively associated with homicide. In addition, inequality and opportunity factors impacted on the total and family homicide rates in 1977-81 so that homicide rates are higher where ethnic diversity is greatest, labour force opportunities are restricted, and there is a higher proportion of young males. Interestingly, in comparison to 1972-76, where migration was not a significant factor, the direction of effects for labour force participation and proportion of young males are reversed. These differences highlight the changes in the demographic composition of cities and the high level of migration in 1977-81.

Kennedy et al. (1991) examined the largest urban areas in Canada (CMAs) and report that unemployment in both 1972-76 and 1977-81 is inversely related to homicide. Unemployment is not a significant predictor in the large cities sample used in the study, but unemployment is clearly related to changing opportunities for labour force participation and population migration. Whereas unemployment has been a perennial problem in Canada, particularly in terms of large regional pockets of disadvantaged workers, this has not necessarily led to an increase in inequality. A

check on this association in 1977-81 may be explained as a consequence of balancing the effects of unemployment with state-supported unemployment insurance. Unemployment, however, may also have indirectly led to shifts in population in Canada from 1971 to 1981 following the linguistic shifts (specifically with movement of large numbers of English-speaking Quebecers to Ontario) and migrations spurred by economic booms and busts (the most graphic example being the oil boom in Alberta followed by a severe economic downturn).

Conversely, the effect of social disorganization has a stronger effect on homicide in 1977-81 than in 1972-76. The fact that social disorganization has a strong impact on homicide rates does not mean that inequality has no effect in 1981. Krahn et al. (1986) and Baron and Straus (1988), have argued that the relation between inequality and homicide may be mediated by the effects of population composition. The changing direction in the effects of the percentages of young males within urban areas in 1972-76 and 1977-81 suggests that cohort size may affect relative levels of economic opportunities. These results support the suggestion by Smith (1986) that the relative size of a birth cohort influences the homicide rate. This suggestion is further supported since the percentages of young males actually decreased in large cities in 1981 relative to 1976. The high levels of unemployment and a population shift may

lead to a decreased sense of economic well-being and a subsequent increase in homicide rates even where the absolute measures of economic inequality have shown a clear improvement. Once population composition is controlled, the east to west variations in homicide rates seem to covary with structural differences in the Canadian economy. An important result of this study is the suggestion that government interventions to remove disparities in economic opportunity could coincide with a decrease in homicide rates. Equally, increased resource allocation such as added support for social services may have similar effects (Browne and Williams 1989).

A more thorough analysis of the relationship between structural variables, region, and other measures of violent crime within cities and over a greater period of time is required (see Lenton 1989; Kennedy et al. 1989). This should include an examination of the countervailing effects of government programmes and resource allocations.

3. HOMICIDE STANDARDIZED BY AGE AND SEX

Conclusions about the diminished importance of regional differences in homicide should not be seen as dismissing the high levels of homicide in Western Canada. The previous baseline models and regional variations in homicide examined the relation between city characteristics and the "crude"

(CHR) homicide victimization rates. Demographics, however, may play a key role in the social distribution of victimization risk. The following section tests hypothesis 7 removing the effects of age and sex from the homicide rates. We reexamine the influence of city characteristics, in large and small cities, on "standardized" (SHR) homicide rates controlling for the distribution of age and sex in urban areas. The results of this analysis are presented and then discussed in relation to the baseline models.

Tables 6.13 and 6.14 illustrate the effects of city characteristics on the SHRs for the full 109 city data set in 1972-76 and 1977-81. Looking at the demographic composition variables in the SHR models, we do not find the predicted shift in the influence of demographics across types of homicide. For 1972-76, there are constant positive effects of youth on the stranger CHR and SHR. For 1977-81, the percentage elderly is replaced by the elderly dependency ratio, a similar item with about the same influence on the homicide rates.

Considering the remaining variables, the standardization process yields essentially the same pattern in the zero-order correlation coefficients as found in the baseline. The SHR regression models are very much the same as the CHR models in terms of variables but social disorganization variables tend to displace inequality variables in terms of magnitude of effects. Population

Table 6.13 Regression Estimates of the Effects of City Characteristics on Age and Sex Standardized Homicide Rates Disaggregated by Victim and Offender Relationship for Canadian Cities, 1972-76

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71
POP76 (LG10)	-.06	-.11	-.18	-.14	-.33	-.22	-.05			.01		
DEN76	-.10	-.22		-.11			-.13	-.25	-.22	-.02	-.11	-.13
MIGR76P	.13	.16	.11	.03			.19*	.13		.12	.14	.16
DIV76	.18*			.14	.17		.17			-.03	-.19	-.25
LOPAR76P	.09	.26*	.21*	.13	.13	.13	-.02	.10	.12	.01	.21*	.27*
VIOL76R	.39*	.41*	.29*	.30*	.31*	.29*	.42*	.45*	.31*	.13	.08	
HOM71 (LG10)	.53*		.49*	.40*		.37*	.44*		.31*	.13		.18*
CVINC76	.21			.08			.23*			.18*		
GINI76	-.05	-.11	-.11	.03			-.10		-.14	-.10		-.12
BRIT76EP	.02	-.22*	-.22*	.01	-.13	-.17*	-.06	-.22*	-.21*	-.01		
ETH76EP	.23*			.14			.24*			.12	.20	.28*
POL76R	.22*	.18*	.18*	.17	.18*	.19*	.11			.21*	.19	.20*
LFP76P	.21*	.15	.15	.11			.25*	.19*	.22*	.12		
UE76P	-.10			-.04			-.10			-.09		
M2034_76	.01		.09	-.11			-.01			.19*	.23*	.23*
ELDER76P	-.02			.06			-.04			-.13		
DEP76Y	.05			.02			.07			.15	.06	.02
DEP76E	-.03			.06			-.04			-.13		
R^2 (adj)		.24	.42		.17	.27		.24	.31		.07	.10

* $p < .05$, one-tailed test of significance

N=109

Table 6.14 Regression Estimates of the Effects of City Characteristics on Age and Sex Standardized Homicide Rates Disaggregated by Victim and Offender Relationship for Canadian Cities, 1977-81

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76
POP81 (LG10)	.04			-.05	-.18		-.03	-.16	-.16	.04		
DEN81 (LG10)	.10		.11	.08		.18*	.02			.11		
MIGR81P	.13	.25*	.24*	.09	.22	.16*	.07			.17*	.29*	.31*
DIV81	.18*			-.01	-.15	-.12	.22*	.24*	.24*	.12		
LOPAR81P	.19*	.18*	.19	.06	.25*		.20*			.10	.17	.19*
VIOL81R	.17*	.13	.10	.04			.18*	.22*	.22*	.12		
HOM76 (LG10)	.31*		.27*	.42*		.46*	.11		.02	-.04		-.11
CVINC81	.11		-.14	.10	.30*		.05			-.01		
GINI81	-.03			-.07			.05			.02		
BRIT81EP	-.23	-.29*	-.25*	-.19*	-.23*	-.20	-.22*	-.26*	-.26*	-.05	-.13	-.12
ETH81EP	.09			.05			.04			.11		
POL81R	.19*	.13		.14	.12		.09			.13	.14	.16*
LFP81P	.06		-.27*	.04	-.39*		-.01			06		
UE81P	-.04		-.14	-.06	-.36		.06			-.11		
M2034_81	.14			.15	.10		.11			.01		
ELDER81P	-.05	.12		-.06			-.09			.10		
DEP81Y	-.13			-.03			-.10			-.11		
DEP81E	.06			-.05			-.10			.10	.21*	.20*
R^2 (adj)		.13	.18		.07	.22		.12	.12		.07	.07

* $p < .05$, one-tailed test of significance

N=109

enters as a factor in the SHR models in 1972-76, but the sign is opposite to what is predicted in Chapter 3 so that areas with less population are found to have higher standardized total and family homicide rates. These results suggest that characteristics of cities produce about the same impact on homicide across demographic groups in the 109 city Canadian data set.

The differential effects of city characteristics in small and large cities was demonstrated earlier in this chapter. Tables 6.15 and 6.16 present the effects of city characteristics on the SHRs in small cities. Tables 6.17 and 6.18 report the models for large cities.

In small cities, the process of standardization of homicide rates fails to elaborate on the baseline models. The same patterns of variables appear so that little of the variation in the SHRs is explained by variation in city characteristics. Of note, however, is that the patterns for population and density in smaller cities in fact are demonstrated to have higher risk of total and stranger homicide victimization contrary to what was predicted. Sociobiologists (Daly and Wilson 1988a,1988b) may argue that this is an age composition effect as there is a strong association of homicide with the percentage of males 20 to 34 years of age. However, as suggested by Cohen and Machalek (1988), we would expect stranger homicide, an expropriative behaviour, to occur in instance of high resource potential.

Table 6.15 Regression Estimates of the Effects of City Characteristics on Age and Sex Standardized Homicide Rates Disaggregated by Victim and Offender Relationship for Small Canadian Cities, 1972-76

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71
POP76 (LG10)	-.03		-.14	-.04			.01			-.04		
DEN76	-.09	-.25		-.09			-.18	-.21	-.25	-.09	.26	-.28
MIGR76P	.06			-.07			.19			.02		
DIV76	.19			.12			.28*	.14		-.12	-.27	-.38
LOPAR76P	.15	.46*	.43*	.24*	.29*	.35*	-.01		.23	-.02	.42*	.42*
VIOL76R	.42*	.42*	.36*	.29*	.31*	.36*	.52*	.52*	.41*	.04		
HOM71 (LG10)	.40*		.29*	.26*		.27*	.47*		.22*	.03		.19
CVINC76	.25*			.11			.31*			.22*		
GINI76	.02	-.28	-.25	-.01		-.18	-.01		-.17	-.16	-.33	-.37
BRIT76EP	-.07	-.31*	-.28*	-.06	-.20	-.27*	.06	-.31*	-.26*	-.11		
ETH76EP	.28*			.36*		-.17	.36*			.17	.39*	.42*
POL76R	.33*	.13	.14	.17	.18	.20	.17			.26*	.19	.21
LFP76P	.23*	.38*	.25	.11	.18	.20	.28*	.26*	.35*	.14		
UE76P	-.13			-.08			-.08			-.11		
M2034_76	.11		.15	.04			.04			.27*	.33*	.53*
ELDER76P	-.08			-.07			-.07			-.17		.28
DEP76Y	.03			.07			.07			.17		
DEP76E	-.09			-.07			-.07			-.17		
R^2 (adj)		.33	.38		.18	.22		.34	.36		.20	.22

* $p < .05$, one-tailed test of significance

N=55

Table 6.16 Regression Estimates of the Effects of City Characteristics on Age and Sex Standardized Homicide Rates Disaggregated by Victim and Offender Relationship for Small Canadian Cities, 1977-81

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76
POP81 (LG10)	-.11	-.18	-.17	-.11			.04			-.25	-.34	-.30
DEN81 (LG10)	.01			.13		.04	-.03			-.01		
MIGR81P	-.04			-.12			-.03			.14	.31*	.41*
DIV81	.02			-.13	-.27	-.21	.23*			-.03		.24
LOPAR81P	.32*	.43*	.25*	.23*	.38*		.18*	.40*	.40*	.13	.39*	.56*
VIOL81R	.13			-.03			.04			.11		
HOM76 (LG10)	.30*		.26*	.48*		.43*	.15		-.04	-.04		-.30*
CVINC81	.05	.19		.05	.19		.01	.29*	.29*	-.10		
GINI81	.01		-.15	-.04			.01			.04		
BRIT81EP	-.29			-.30*	-.31*	-.30*	-.24*			.01		
ETH81EP	-.07			-.12	-.25	-.22	.01			.01		
POL81R	.25*	.11		.16			.19			.17		.26*
LFP81P	.03			.01			.03			.06		
UE81P	.06			.04	-.40*	-.30*	.07			-.07		
M2034_81	.20			.19			.19			.01	-.21	-.35
ELDER81P	-.08			-.07			-.12			.07		
DEP81Y	-.11			-.09			-.12			-.04		
DEP81E	-.09			-.08			-.13			.08		
R^2 (adj)		.13	.16		.14	.29		.11	.11		.11	.16

* $p < .05$, one-tailed test of significance

N=55

We find instead that homicide rates correlate inversely with relative income inequality. These results are partially supportive of routine activities theories (South and Cohen 1985). In particular, where opportunities for employment are restricted we would expect a greater degree of migration of young persons to areas where employment prospects are greater. This may account for low numbers of young persons in an area and this is consistent with cohort explanations of crime (Easterlin and Schapiro 1979) where greater pressures on particular age groups in a population may lead to increased violence in the community.

In large cities, there are few differences between the standardized and baseline models. Similar variables appear with some population variables taking on greater importance in 1977-81. The direction of effect for population density is in the predicted direction, but the effect for population size suggests that cities with less population present greater risk for victimization. Also, while there is considerable variation in age-specific homicide rates (Appendix C) we find that age composition does not have a strong link to homicide rates. Disconfirming results are found in 1972-76 where there is a weak inverse effect of the proportion of young males in a population on the total and family homicide rates. These effects are opposite to reports in the U.S. (O'Brien 1989). This runs counter to the suggestions of biosociological theory concerning the

Table 6.17 Regression Estimates of the Effects of City Characteristics on Age and Sex Standardized Homicide Rates Disaggregated by Victim and Offender Relationship for Large Canadian Cities, 1972-76

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71	Zero Order	β	β with HOM71
POP76 (LG10)	-.15		-.16	-.29	-.22	-.15	-.04			-.03		
DEN76	-.14	-.21		-.25	-.17		-.07			.03		
MIGR76P	.26*	.20		.21			.19	.22		.26*	.37*	.41*
DIV76	.26*			.29*	.26*	.22*	.17			.01	-.22	-.27
LOPAR76P	-.07			-.13			-.05			.04	.15	.16
VIOL76R	.39*	.39*	.17*	.36	.29*	.14	.31*	.24*		.26*	.36*	.22
HOM71 (LG10)	.78*		.79*	.67*		.58*	.47*		.54*	.32*		.32*
CVINC76	.13			.08			.14	-.21	-.29*	.09		
GINI76	-.17			-.12			-.33	-.31	-.42	.01	.17	
BRIT76EP	.19		-.17*	.25*		-.14	.06			.15		
ETH76EP	.29			.20			.09			.05		
POL76R	-.06		.17	-.17			-.01			.10	.21*	.13
LFP76P	.19			.12			.22		.18	.08		
UE76P	-.04			.05			-.16			-.05		
M2034 76	-.23			-.36	-.21	-.21	-.07			-.02		
ELDER76P	.13			.22*			.05			-.03		
DEP76Y	.09			.10			.01		-.13	.16		
DEP76E	.15		.17*	.23*			.05			-.02		
R^2 (adj)		.19	.66		.30	.55		.12	.34		.12	.19

* $p < .05$, one-tailed test of significance

N=54

Table 6.18 Regression Estimates of the Effects of City Characteristics on Age and Sex Standardized Homicide Rates Disaggregated by Victim and Offender Relationship for Large Canadian Cities, 1977-81

	Total			Family			Acquaintance			Stranger		
Indicator	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76	Zero Order	β	β with HOM76
POP81 (LG10)	-.08	-.32	-.25	-.18	-.32	-.32	-.13	-.19		-.01	-.20	-.20
DEN81 (LG10)	.11	.28*	.31*	-.05	.20	.20	.08			.18	.32*	.32*
MIGR81P	.35*	.38*	.25*	.47*	.56*	.56*	.19			.19	.20	.20
DIV81	.26*			.13	-.26	-.26	.25*	.18	.18	.20		
LOPAR81P	-.10	.17		-.39*			.09			-.01	.22	.22
VIOL81R	.21	.08		.20			.18	.24*		.11		
HOM76 (LG10)	.35*		.31*	.27*		.12	.26*		.36*	-.05		-.07
CVINC81	.10			.19			-.06			.02		
GINI81	-.01			-.10			.11		.22	.05		
BRIT81EP	-.16	-.19	-.22*	.02	-.07	-.07	-.20	-.25*		-.14	-.19	-.19
ETH81EP	.28*	.44*	.35*	.39*	.55*	.55*	.09			.23*	.41*	.41*
POL81R	.01			.08			-.07			-.05	-.19	-.19
LFP81P	.03	-.25*	-.22	.08	-.35*	-.35*	-.06			.01		
UE81P	-.11			-.24			.06			-.12		
M2034_81	.06			.08	.16	.16	.02			.02		
ELDER81P	-.01			-.01			-.03			.15		
DEP81Y	-.07			.16			-.07			-.15		
DEP81E	-.01			.01			.04			.14	.18	.18
R^2 (adj)		.22	.30		.39	.39		.10	.13		.12	.12

* $p < .05$, one-tailed test of significance

N=54

overriding importance of the presence of young males in explaining homicide events since a lower proportion of young males in the population is associated with homicide victimizations. We suggest that the differences in the CHR and SHR models are minimal so that age and sex compositional differences across cities are not the most important variables for explaining differences in homicide rates in Canadian cities. Overall, hypothesis 7 is not supported. The age-sex standardized models fail to illustrate substantial differences from the baseline models. Of significance, however, this study negates the proposition that there is a unitary direct effect of age on homicide events regardless of circumstance.

Chapter 7

DISCUSSION AND SUMMARY

Previous research on murder in Canada has studied patterns for the nation, provinces, and some large cities. This study has attempted to extend the debate on the social production of homicide choosing to focus on murder in small and large cities enabling a detailed description and statistical assessment of the spatial and temporal distribution of homicide in Canada, particularly the effects of city size and region. While the descriptions and analysis of murder presented in this study can document the correlations between various aspects of social structure and murder rates, they do not allow a definitive assessment of the causes. Nonetheless, the process of identifying murder rates revealed several interesting substantive findings and sensitized us to several methodological and conceptual issues. It is important to consider the strengths and weaknesses of this analysis as we move to a discussion of what it is that we may do to control homicide in Canada.

Using the national homicide data file, we calculated murder rates in Canadian cities with populations greater than 10,000 population. We matched reports for specific police jurisdictions with population counts for 109 urban areas based on Census information to estimate murder rates. This information, built on the strength of the national

homicide data base, extends far beyond what is available in the published tables on homicide as we identified a wide variety of types of homicide rates.

Earlier, in chapter 4, we described the rates and distribution of murder in cities in Canada. We found that there was a substantial degree of variation in murder across the country and over time. We can conclude that murder in Canada is a relatively rare event but it is still a very serious issue especially in areas where homicide rates are much higher than the Canadian average and in others where homicide rates have increased over time. Saying that homicide in Canada is a rare event fails to reflect the fact that some cities, such as Chilliwack with a rate about four times the national rate, have murder rates that are as high or higher than those for urban ghettoes in the United States. On a less disconcerting note, we also may conclude that persons in many Canadian cities are safe from murder since most cities have few murders in a given year and some had none at all.

Descriptive studies of homicide in Canada have tended to ignore the fact that some cities have rates of zero (or low). It is these cities, however, that potentially can help us to understand the determinants of homicide victimization in Canada. It is true that the presentation of murder rates on an annual basis for cities in Canada is of limited practical use. Some cities have so few homicides in a given

year that a gain or loss of a single homicide victimization creates considerable statistical instability in its annual homicide rate. We statistically corrected for this problem, grouping city level homicide counts into five-year rather than single-year blocks, and can use the information in a reliable manner. We used this information to illustrate that the temporal distribution of the city rates follows the same trend as the national homicide rate peaking in the mid-1970s. Note also that we showed that some cities, even using five-year blocks, still had no homicides reported. We were able to deal with the methodological problem of small murder counts to more fully describe variations in murder across Canada. Awareness of small counts shifts the descriptive analysis to cities which have strong safety records but it also brings to light information which may impact on policy decisions in dealings with the homicide data.

The public release of information for research purposes on homicide in Canadian cities is complicated by policies where information cannot be released where it may be possible to identify individual persons. Policy analysts must note that the analysis of homicide data will often involve information about incidents that are infrequent because murders are relatively rare. The counts and classifications, however, are vital for identification of the extent of murder in Canada. We argue that the

suppression and aggregation of ongoing national homicide data, commonly used to maintain confidentiality of respondents in Statistics Canada social surveys (see Census materials), inadvertently negates access to the most important parts of the national homicide data file particularly for the classification and analysis of trends in types of homicide in smaller cities.

Earlier we showed how the national homicide incident file may be used to classify homicide rates disaggregated along the victim and offender relationship. We found that there are significant differences in the distribution of murder by type and that the rates have changed over time. There are several possible limitations, however, in the interpretation of the disaggregated murder rates. First, these rates, even more so than the total murder rates, are complicated by very small counts for the small cities so that an annual rate there would be very unreliable. Second, in dealing with missing information on the victim and offender relationship, future research should address factors which lead to the loss of this information and whether reporting mechanisms have changed over time. Third, a possible conceptual problem with the disaggregated rates stems from our use of the total population in a city as the baseline rather than a relationship specific population. Census information, however, does not report a population count of "family", "acquaintance" and "stranger" members in

cities. Finally, this study has assumed that the types of relationships are constant across cities.

Overall, our findings clearly demonstrated that there is substantial variation in total murder rates and those disaggregated along the victim and offender relationship in Canadian cities. Research on this variation helps us to understand the social causes of homicide.

In Chapter 2 we introduced a theoretical framework for understanding homicide based on factors of social disorganization, social control, criminal opportunity, and demographic composition theories. At a broad level, in chapter 3, we sought to incorporate aspects of each of these theories so that we could appreciate how characteristics of cities influence types of homicide as disaggregated along the victim and offender relationship. Chapter 6 used correlations and regression models to test the associations of structural characteristics with spatial and temporal variations in homicide victimization in Canada. We found that each of the theoretical perspectives may partially explain variations in homicide. To some extent the findings of this study are limited because we are not able to attribute directly the causes of homicide. To some extent this is because of an overlap of indicators across perspectives. Nonetheless, we are able to identify a number of correlates of murder and provide an assessment of perspectives by looking at the patterns amongst the

variables. Now the important question is how do we best utilize this information in terms of a theoretical understanding and control of homicide? Let us address these issues in turn.

A. UNDERSTANDING HOMICIDE IN CANADA

In assessing the links between social disorganization, inequality, opportunity, and demographic composition, this study has focussed on the determinants of homicide in Canadian cities. While some of the factors leading to increased victimization are predicted by conventional theory (for example, city size, regional location, economic inequality), others (such as the interplay between labour force participation and age composition) were not expected based on traditional sociological theories.

In our analysis we find weak support for the proposition that homicide varies based on city size. Correlational analysis clearly shows that population size and density do not have strong influences on homicide rates. There is a significant difference in the average homicide rates in 1977-81 with large cities having a higher homicide rate. Nonetheless, some small cities have higher homicide rates than the national average.

City size, however, can be considered in several ways. We found that we were better able to explain variations in homicide in large cities. The baseline data was separated

into small versus large cities, using a dummy variable, to determine whether the same types of variables would predict homicide in each size of city. We could have entered city size as another independent variable in our baseline model but the primary goal was to determine whether the same types of variables would occur in the small and large city models. We revealed that homicide rates are better predicted in large cities. Several issues arise, however, when looking at the low explanatory power of the regression models for small cities. First, it is possible that other methods of analysis besides regression are potentially more useful. Logistic regression, for example, might be used to compare those cities with homicide victimization rates of zero to all other cities. Second, we also may have to rethink how to measure social structure in non- and less-urbanized environments. Our current models using census materials seem best applied in large urban environments. As suggested by Lenton (1989) and Kennedy et al. (1989), clearly a more thorough analysis of the relationship between structural variables and other measures of violent crime within small cities and over a greater period of time is required.

Moving to the influence of regional location on homicide, we illustrated that it follows an east to west pattern of murder. Regional variations, however, in homicide rates are found to be an artifact of the social structural distribution of city characteristics in Canada. Murder rates

converged between eastern, central, and western Canada in areas where there are higher levels of social disorganization and inequality (see also Kennedy et al. 1991).

In Chapter 4 we presented homicide rates standardized by age and sex. Criminologists have argued that the demographic composition of a community can have a strong influence on crime rates. The variations in our results, however, suggest that the age and sex structure of Canadian cities has a small influence on homicide rates. There were strong correlations between the unstandardized and standardized homicide rates. Demographic composition, nonetheless, cannot be ignored. Using the standardized homicide rates, the influence of city size disappeared and regional disparities in murder are less prominent.

An aim of this study was to determine which structural characteristics influence homicide levels in Canadian urban areas. We noted that several aspects of cities changed substantially during the period 1971 to 1981. Social disorganization in Canadian cities was evident through increases in the percentage of divorced persons, higher property and violent crime rates, and as a greater percentage of lone parent households. Social inequality factors impacted on city characteristics as an increase in relative economic inequality despite absolute increases in income. Ethnic heterogeneity (higher percentages of English

or French ethnic groups) is strongly tied to income inequality. We found these effects were more pervasive when taking city size (large cities) and regional location (western cities) into account. Considering criminal opportunity measures, we indicated that there was a dramatic increase in female labour force participation and female unemployment rates coinciding with absolute increases in family incomes, divorce, and lone-parenting. These relationships were stronger in large cities. Finally, looking at demographic composition we saw shifts in population structure due to the baby boom where large cities are less likely to have high proportions of young children. While large and small cities are growing in size, large cities have relied upon high levels of migration to sustain population growth.

Research on the social correlates of crime has often emphasized aspects of a single theoretical perspective arguing for the prominence of social disorganization over inequality or vice versa. In chapter 5 we observe that our measures of city characteristics from each perspective are strongly interrelated. We believe that the empirical overlap amongst indicators negates the possibility for equivocally stating that one theory or another takes prominence in the social production of homicide.

Disaggregation of the homicide rates along the victim and offender relationship helped to qualify some of the

effects of city characteristics on homicide. It indicated that some variables have rather extensive effects (for example, violent crime and the divorce rate), whereas others have rather limited effects (aspects such as high risk youth and dependency ratios). Most notably, no variables had invariant effects over time and in all city types. The patterns in results, however, do follow theoretical expectations for sets of variables. As discussed in Chapter 2, it appears that social disorganization, inequality, opportunity, and demographic composition theories may substantially overlap in the types of variables that researchers will use to examine the social production of homicide. The theoretical overlap in the selection of covariates for modelling homicide victimization rates limits the types and degree of inferences that may be made as we try to explain the causes of spatial and temporal differences in murder across Canada. The findings of this study about the strengths and weaknesses of particular perspectives for explaining homicide are open to some reinterpretation since we do not have variables that are independent measures of each of the perspectives. Nonetheless, we are able to reliably identify estimate variables and model aspects of each of the theories. We cannot equivocally state that a variable belongs only with one perspective, but we can look at patterns among variables and conclude that homicide victimization appears to be more

sensitive to aspects of social disorganization theories in times of rapid social change.

B. PROJECTIONS AND CONTROL OF HOMICIDE IN CANADA

The relationship between homicide levels and social structure is complicated in that it changes over time. It is not complicated, however, in ways that some people may imagine. Aggregate social characteristics of cities are hard to measure but general trends and relationships are evident. We can combine the empirical findings from the regression models of homicide victimization with trends in social and demographic characteristics of cities to make projections of homicide victimization patterns in Canadian cities.

Based on census materials presented earlier in this study and post-censal projections for population (Statistics Canada 1990), the general pattern in social characteristics emerging to the next century could be marked by:

(1) a slow down in population growth;

(2) an increase in total labour force participation;

(3) an increase in the percentage of divorced persons;

(4) an increase in the percentage of non-traditional family units, particularly lone-parent families;

(5) an enhanced role for immigration with an increasing percentage of ethnic minority groups;

(6) continuing levels of net internal-migration in the net distribution of population, and;

(7) an aging of the population yielding moderate decreases in the youth dependency ratio and gradual increases in the elderly dependency ratio.

Further, we can expect some variation in the social mosaic based on city size in Canada. Immigration and net internal-migration are expected to be polarized toward large cities so that they will grow somewhat faster and attract a larger number of immigrants. These factors are expected to have greater prominence as the overall population ages into the 21st Century.

The regression models, from Chapter 6, can provide a baseline on which we may make projections in homicide patterns in Canada. Projections may be estimated for a wide variety of situations.

In small cities, based on the 1977-81 model, we expect that population, density, family income inequality and age composition will not influence homicide rates. Consider, however, what may happen in the next century based on variables which have a significant influence on murder levels. Hypothetically, divorce is expected to increase slightly with a concurrent increase in the percentage of lone-parents. Increases in divorce rates will partially lower the rate of family homicide but the consequent increase in lone-parenting will override this effect so that there will be an increase in the family murder rate in small

cities. Considering ethnic composition and net-migration, there will be higher levels of family homicide and stranger homicide in smaller cities if trends toward ethnic group homogeneity in small cities and net-migration into large cities remain unchecked.

Drawing from the large cities regression model for 1977-81 we expect that population density, labour force participation, lone-parent households, and ethnic composition will influence homicide rates. Assume that population in Canada will show slow growth. Labour force participation rates are predicted to increase, particularly for women. Lone-parent households will continue to increase in prevalence. Also, ethnic composition will shift toward heterogeneity at a higher rate in large cities than in small cities. The total homicide rate, thus, will increase slightly as ethnicity shifts to minority group composition and migration levels are high. Family homicide rates will increase where ethnic composition and migration levels are high but this will be held in check if labour force participation opportunities follow a projected increase. Stranger homicide rates are less predictable but are expected to increase more dramatically than family murders due to the increased pressures from higher population density, greater numbers of lone-parents, higher net migration, and higher levels of ethnic minority groups in large cities.

These projections are based on the 1977-81 regression models for small and large cities, and a hypothetical trend in the social structure of Canadian cities. These models should not be applied uncritically to a projection of murder levels in Canada, particularly as the statistical foundation for estimating the models is weak. We are restricted to a small sample size and there is a high level of collinearity among variables. Nevertheless, they do provide an important baseline for analyzing murder trends across Canada and over time. While our homicide models only provide an indirect assessment of the causes of murder we can use them to give us a guide as to how changes in structural characteristics are linked with murder rates. Assessing what can be done about murder in Canada, we can work to ameliorate conditions which are linked with murder. In particular, policy analysts may look to resource mobilization as a social response that will negate structural conditions shown to be associated with murder, assisting those most vulnerable to homicide victimization, reducing the murder rate.

C. CLOSING REMARKS AND RECOMMENDATIONS

Considering the trends in homicide victimization, we find some interesting differences in the information when the samples are divided according to city size. Large and small cities do not necessarily have different homicide rates, but we have shown that homicide rates are much more

predictable for large urban areas. Since more and more Canadians are moving into large urban areas, and becoming increasingly urbanized, as this happens, we may find in the future that it is possible to predict homicide levels with greater certainty.

Projecting into the next century, the structural characteristics of cities indicate some important shifts in population composition. We will see a rapidly changing social mosaic in terms of ethnic composition. Evidence suggests that there will be substantial changes in family composition due to increased divorce rates, consequent adjustments in lone parent ratios, and a slight adjustment due to aging of the population. Economic trends suggest that families in large cities will have higher incomes than families in small cities, and that relative inequality will persist despite absolute increases in family income. Opportunity factors will increase in prominence with overall labour force participation rates increasing slightly as greater numbers of women enter the labour force. Two areas are of particular note in all of this analysis of structural change: lone parenting and ethnicity.

Lone-parenting, representing a consequence of tremendous change in family structure, poses problems as it enhances the potential level of homicide in Canada. While lone-parenting is associated with murder, lone-parents, the vast majority of whom are women, are not the direct cause of

increased murder rates. We suggest, nonetheless, that policy analysts can look to indirect interventions focussing on the circumstances of these women as this may lead to a reduction in murder rates. Research by Browne and Williams (1989) suggests that resource mobilization to assist women escape from dangerous situations will result in a lower domestic murder rate. The same may be true for Canada. While Canadian data on the use of women's shelters is not currently available, we believe that the association of lone-parenting with murder rates highlights problems for murder levels that go far beyond the initial steps of interpersonal conflict and the leaving of a failed marriage. We must note that lone-parents, particularly women, will face extraordinary pressures in a society where labour opportunities are restricted (Jones and Tepperman 1988). Economic resources could be directed at alleviating the social problems, such as affordable childcare and lessening of barriers to education, faced by this disadvantaged group. It will certainly be of interest to see the social responses to family change in terms of provision of resources for allowance of greater labour force participation so that there will be a lessening of pressures toward lethal violence.

Structural changes in ethnicity places additional restrictions on labour force opportunities. Minority groups increasingly are moving to large urban centres which may

increase homicide levels if employment opportunities are restricted. Because of this factor, we may see special minority ethnic interest groups demanding greater attention in terms of economic opportunities and in their dealings with the police and criminal justice system. In addressing the problem of increasing homicide rates one strategy, translated through the political system, can involve resource mobilization for promotion of labour force opportunities in large urban centres. This strategy seems more likely to have an impact on murder levels than simply increasing the level of expenditure on police personnel. In fact, with changes in ethnic composition in Canada there is a perception amongst some ethnic groups that police forces cannot effectively deal with their needs. While it is the police who must directly confront increased levels of murder in Canada, resource expenditures to increase police per capita have not had a consistent impact on murder rates. Nonetheless with the increasing levels of minority group members, and subsequent pressures on murder rates, in Canadian society we suggest that police forces should consider implementation of programs to remove real and perceived inequities in their services.

Alternative intervention strategies for the smaller urban centres are less practical. We could develop programs to attract minorities in greater proportion to smaller centres. This undoubtably is more difficult as immigrants

have tended to rely upon ethnic support networks and cultural resource centres which are located in the larger urban areas. Nonetheless, smaller centres in Canada have much to offer. Resources could be directed toward greater promotion of labour force opportunities in smaller communities to attract persons to these centres. Any efforts to coordinate intervention strategies will involve much long term planning amongst a variety of social agencies.

In sum, we clearly show that the social characteristics of Canadian cities have changed along a number of dimensions. We would like to be able to quickly and reliably predict how changes in city characteristics influence social control mechanisms and ultimately murder rates. This study suggests that aspects of social disorganization override the effects of inequality, opportunity, and demographic composition. There remain theoretical and measurement problems, however, as we are less well able to predict homicide levels in small cities over time. Methodological problems also limit inferences from this study as we used cross-sectional models for only two points in time. Our analysis of city characteristics showed that some variables, lone-parenting and female labour force participation in particular, changed substantially over time. Shifts in family structure and in lifestyles may significantly influence the types and variations of motivational processes

and social control in the community. Future research when data is available for several more points in time might explore whether measures of social change may better explain variations in homicide. Information with stronger indicators of constructs as discussed in this study is available for the 1986 Census and soon will be available for the 1991 Census. Working in conjunction with an updated homicide tape we may reconfront the task of understanding the social production of murder in Canada.

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Appendix A

Census Metropolitan Areas and Census Agglomeration Areas by Province (East to West)

CMA/CA	CMANAME	PROVINCE
14	St. John's, Newfoundland	1
38	Corner Brook, Newfoundland	1
59	Labrador City, Newfoundland	1
15	St. John, New Brunswick	2
28	Bathurst, New Brunswick	2
32	Cambellton, New Brunswick	2
43	Edmundston, New Brunswick	2
46	Fredericton, New Brunswick	2
66	Moncton, New Brunswick	2
73	Oromocto, New Brunswick	2
34	Charlottetown, Prince Edward Island	3
100	Summerside, Prince Edward Island	3
4	Halifax, Nova Scotia	4
56	Kentville, Nova Scotia	4
69	New Glasgow, Nova Scotia	4
102	Sydney, Nova Scotia	4
103	Sydney Mines, Nova Scotia	4
109	Truro, Nova Scotia	4
2	Chicoutimi-Jonquiere, Quebec	5
8	Montreal, Quebec	5
11	Quebec City, Quebec	5
20	Trois Rivieres, Quebec	5
25	Asbestos, Quebec	5
26	Baie Comeau, Quebec	5
41	Dolbeau, Quebec	5
42	Drummondville Quebec	5
47	Granby, Quebec	5
52	Joliette, Quebec	5
58	La Tuque, Quebec	5
60	Lachute, Quebec	5
63	Magog, Quebec	5
84	Rimouski, Quebec	5
85	Riviere du loup, Quebec	5
86	Rouyn, Quebec	5
87	St. Georges, Quebec	5
88	St. Hyacinthe, Quebec	5
89	St. Jean, Quebec	5
90	St. Jerome, Quebec	5
91	Valleyfield, Quebec	5
94	Sept Ilses, Quebec	5

CMA/CA	CMANAME	PROVINCE
95	Shawinigan, Quebec	5
96	Sherbrooke, Quebec	5
98	Sorel, Quebec	5
105	Thetford Mines, Quebec	5
110	Val d'or, Quebec	5
112	Victoriaville, Quebec	5
5	Hamilton, Ontario	6
6	Kitchener-Waterloo, Ontario	6
7	London, Ontario	6
9	Oshawa, Ontario	6
10	Ottawa-Hull, Quebec / Ontario	6
13	St. Catherines, Ontario	6
17	Sudbury, Ontario	6
18	Thunder Bay, Ontario	6
19	Toronto, Ontario	6
23	Windsor, Ontario	6
27	Barrie, Ontario	6
29	Belleville, Ontario	6
30	Brantford, Ontario	6
31	Brockville, Ontario	6
35	Chatham, Ontario	6
37	Cobourg, Ontario	6
39	Cornwall, Ontario	6
44	Fergus, Ontario	6
49	Guelph, Ontario	6
50	Haileybury, Ontario	6
51	Hawkesbury, Ontario	6
55	Kenora, Ontario	6
57	Kingston, Ontario	6
61	Leamington, Ontario	6
62	Lindsay, Ontario	6
65	Midland, Ontario	6
71	North Bay, Ontario	6
72	Orillia, Ontario	6
74	Owen sound, Ontario	6
75	Pembroke, Ontario	6
77	Peterborough, Ontario	6
92	Sarnia Ontario	6
93	Sault Ste Marie Ontario	6
97	Smith Falls, Ontario	6
99	Stratford, Ontario	6
108	Trenton Ontario	6
24	Winnipeg, Manitoba	7
79	Portage la Prairie, Manitoba	7
106	Thompson, Manitoba	7
45	Flin Flon, Manitoba / Sask.	7

CMA/CA	CMANAME	PROVINCE
12	Regina, Saskatchewan	8
16	Saskatoon, Saskatchewan	8
67	Moose Jaw, Saskatchewan	8
70	North Battleford, Saskatchewan	8
81	Prince Albert, Saskatchewan	8
101	Swift Current, Saskatchewan	8
1	Calgary, Alberta	9
3	Edmonton, Alberta	9
64	Medicine Hat, Alberta	9
21	Vancouver, British, Columbia	10
22	Victoria, British Columbia	10
36	Chilliwack, British Columbia	10
40	Courtenay, British Columbia	10
53	Kamloops, British Columbia	10
54	Kelowna, British Columbia	10
68	Nanaimo, British Columbia	10
78	Port Alberni, British Columbia	10
80	Powell River, British Columbia	10
82	Prince George British Columbia	10
83	Prince Rupert, British Columbia	10
104	Terrace, British Columbia	10
107	Trail, British Columbia	10
111	Vernon, British Columbia	10

Appendix B.1

Average Homicide Rates by Victim and Offender Relationship in Census Metropolitan Areas and Census Agglomeration Areas, 1967-71

CMA/CA		Total	Fam	Acq	Str
1	Calgary	1.54	.42	.42	.69
2	Chicoutimi-Jonquiere	.15	.15	.00	.00
3	Edmonton	1.37	.86	.39	.13
4	Halifax	1.98	1.51	.28	.19
5	Hamilton	.76	.30	.25	.21
6	Kitchener-Waterloo	.09	.09	.00	.00
7	London	2.17	1.30	.61	.26
8	Montreal	2.52	1.12	.67	.73
9	Oshawa	.83	.42	.21	.21
10	Ottawa	.70	.21	.33	.16
11	Quebec City	.87	.32	.28	.28
12	Regina	1.99	.99	.43	.57
13	St. Catherines	.53	.20	.20	.13
14	St. John's	.61	.46	.15	.00
15	St. John	1.12	.75	.00	.37
16	Saskatoon	1.26	.79	.16	.32
17	Sudbury	2.06	1.51	.41	.14
18	Thunder Bay	4.82	1.85	2.04	.93
19	Toronto	.83	.47	.24	.12
20	Trois Rivieres	.82	.20	.41	.20
21	Vancouver	1.94	.72	.70	.52
22	Victoria	1.33	.41	.51	.41
23	Windsor	1.39	.78	.26	.35
24	Winnipeg	1.63	.60	.52	.52
25	Asbestos	.00	.00	.00	.00
26	Baie Comeau	1.58	.79	.00	.79
27	Barrie	6.81	4.77	2.04	.00
28	Bathhurst	.00	.00	.00	.00
29	Belleville	2.85	2.85	.00	.00
30	Brantford	1.25	1.00	.25	.00
31	Brockville	4.57	3.65	.00	.91
32	Cambellton	1.61	.00	1.61	.00
34	Charlottetown	.00	.00	.00	.00
35	Chatham	8.93	4.20	3.15	1.58
36	Chilliwack	6.00	2.40	3.60	.00
37	Cobourg	6.55	3.28	1.64	1.64
38	Corner brook	1.52	.76	.00	.76
39	Cornwall	.00	.00	.00	.00
40	Courtenay	3.69	1.23	1.23	1.23
41	Dolbeau	.00	.00	.00	.00
42	Drummondville	.86	.86	.00	.00
43	Edmundston	2.44	2.44	.00	.00
44	Fergus	.00	.00	.00	.00

45	Flin Flon	.00	.00	.00	.00
46	Fredericton	.00	.00	.00	.00
47	Granby	1.02	1.02	.00	.00
49	Guelph	.96	.64	.32	.00
50	Haileybury	.00	.00	.00	.00
51	Hawkesbury	.00	.00	.00	.00
52	Joliette	.00	.00	.00	.00
53	Kamloops	4.28	1.43	2.38	.48
54	Kelowna	.00	.00	.00	.00
55	Kenora	1.53	.00	1.53	.00
56	Kentville	.00	.00	.00	.00
57	Kingston	6.52	4.26	1.50	.75
58	La Tuque	.00	.00	.00	.00
59	Labrador City	.00	.00	.00	.00
60	Lachute	.00	.00	.00	.00
61	Leamington	.00	.00	.00	.00
62	Lindsay	3.14	1.57	1.57	.00
63	Magog	.00	.00	.00	.00
64	Medicine Hat	1.37	.00	.68	.68
65	Midland	.85	.85	.00	.00
66	Moncton	1.42	1.07	.36	.00
67	Moose Jaw	4.68	2.34	2.34	.00
68	Nanaimo	5.00	2.64	1.76	.59
69	New Glasgow	.00	.00	.00	.00
70	North Battleford	2.64	1.32	1.32	.00
71	North Bay	3.11	2.72	.39	.00
72	Orillia	.69	.69	.00	.00
73	Oromocto	.00	.00	.00	.00
74	Owen sound	.00	.00	.00	.00
75	Pembroke	.98	.98	.00	.00
77	Peterborough	3.78	1.13	1.13	1.51
78	Port Alberni	2.64	1.13	1.51	.00
79	Portage la Prairie	2.93	.98	.98	.98
80	Powell River	5.83	2.91	1.46	1.46
81	Prince Albert	6.32	4.22	1.41	.70
82	Prince George	4.05	2.53	1.52	.00
83	Prince Rupert	3.81	2.54	1.27	.00
84	Rimouski	.00	.00	.00	.00
85	Riviere du Loup	.00	.00	.00	.00
86	Rouyn	2.10	2.10	.00	.00
87	St. Georges	.00	.00	.00	.00
88	St. Hyacinthe	.50	.00	.50	.00
89	St. Jean	.85	.85	.00	.00
90	St. Jerome	1.13	.00	.57	.57
91	Salaberry de Valleyfield	.00	.00	.00	.00
92	Sarnia	.25	.25	.00	.00
93	Sault Ste. Marie	.49	.25	.25	.00
94	Sept Ilses	.00	.00	.00	.00
95	Shawinigan	.67	.67	.00	.00
96	Sherbrooke	.21	.00	.00	.00
97	Smith Falls	2.85	2.85	.00	.00
98	Sorel	1.65	.55	.55	.55

99	Stratford	.82	.00	.82	.00
100	Summerside	1.43	1.43	.00	.00
101	Swift Current	.00	.00	.00	.00
102	Sydney	1.21	.67	.54	.00
103	Sydney Mines	.88	.88	.00	.00
104	Terrace	5.62	5.62	.00	.00
105	Thetford Mines	.00	.00	.00	.00
106	Thompson	2.11	1.05	1.05	.00
107	Trail	4.66	4.66	.00	.00
108	Trenton	1.40	1.40	.00	.00
109	Truro	4.13	1.65	.83	1.65
110	Val d'Or	5.24	1.05	1.05	3.15
111	Vernon	1.14	.00	.00	.00
112	Victoriaville	.00	.00	.00	.00

Appendix B.2

Average Age and Sex-Standardized Homicide Rates
by Victim and Offender Relationship in
Census Metropolitan Areas and Census Agglomeration Areas
1967-71

CMA/CA		Total	Fam	Acq	Str
1	Calgary	1.57	.23	.42	1.58
2	Chicoutimi-Jonquiere	.02	.03	.00	.00
3	Edmonton	1.26	.96	.35	.06
4	Halifax	2.60	2.95	.19	.12
5	Hamilton	.39	.12	.15	.14
6	Kitchener-Waterloo	.01	.01	.00	.00
7	London	3.12	2.22	.86	.22
8	Montreal	4.16	1.61	1.03	1.71
9	Oshawa	.47	.23	.10	.14
10	Ottawa	.33	.05	.25	.09
11	Quebec City	.50	.13	.18	.25
12	Regina	2.68	1.32	.43	1.05
13	St. Catherines	.19	.05	.09	.06
14	St. John's	.26	.28	.06	.00
15	St. John	.87	.78	.00	.45
16	Saskatoon	1.08	.83	.06	.32
17	Sudbury	2.89	3.03	.40	.06
18	Thunder Bay	15.58	4.66	9.60	2.67
19	Toronto	.45	.28	.13	.05
20	Trois Rivieres	.45	.05	.39	.14
21	Vancouver	2.45	.68	1.09	.83
22	Victoria	1.19	.23	.60	.49
23	Windsor	1.31	.83	.16	.39
24	Winnipeg	1.76	.47	.61	.84
25	Asbestos	.00	.00	.00	.00
26	Baie Comeau	1.71	.80	.00	2.32
27	Barrie	31.50	30.91	9.85	.00
28	Bathhurst	.00	.00	.00	.00
29	Belleville	5.50	10.95	.00	.00
30	Brantford	1.04	1.35	.14	.00
31	Brockville	14.03	17.77	.00	2.69
32	Cambellton	1.81	.00	6.38	.00
34	Charlottetown	.00	.00	.00	.00
35	Chatham	54.31	24.05	23.59	7.94
36	Chilliwack	27.45	12.58	25.07	.00
37	Cobourg	29.22	14.61	6.39	8.51
38	Corner brook	1.66	.81	.00	2.03
39	Cornwall	.00	.00	.00	.00
40	Courtenay	9.42	2.06	3.68	5.05
41	Dolbeau	.00	.00	.00	.00
42	Drummondville	.50	.98	.00	.00
43	Edmundston	4.07	8.10	.00	.00

44	Fergus	.00	.00	.00	.00
45	Flin Flon	.00	.00	.00	.00
46	Fredericton	.00	.00	.00	.00
47	Granby	.71	1.39	.00	.00
49	Guelph	.61	.54	.24	.00
50	Haileybury	.00	.00	.00	.00
51	Hawkesbury	.00	.00	.00	.00
52	Joliette	.00	.00	.00	.00
53	Kamloops	12.21	2.65	13.12	.75
54	Kelowna	.00	.00	.00	.00
55	Kenora	1.59	.00	5.43	.00
56	Kentville	.00	.00	.00	.00
57	Kingston	27.79	23.52	5.11	1.81
58	La Tuque	.00	.00	.00	.00
59	Labrador City	.00	.00	.00	.00
60	Lachute	.00	.00	.00	.00
61	Leamington	.00	.00	.00	.00
62	Lindsay	6.80	3.48	5.93	.00
63	Magog	.00	.00	.00	.00
64	Medicine Hat	1.29	.00	1.12	1.44
65	Midland	.50	1.02	.00	.00
66	Moncton	1.39	1.54	.30	.00
67	Moose Jaw	14.96	7.75	12.90	.00
68	Nanaimo	16.85	9.55	7.24	1.08
69	New Glasgow	.00	.00	.00	.00
70	North Battleford	4.89	2.50	4.25	.00
71	North Bay	6.76	10.05	.38	.00
72	Orillia	.32	.66	.00	.00
73	Oromocto	.00	.00	.00	.00
74	Owen Sound	.00	.00	.00	.00
75	Pembroke	.66	1.34	.00	.00
77	Peterborough	12.22	1.84	4.69	11.61
78	Port Alberni	5.94	1.83	8.18	.00
79	Portage la Prairie	5.91	1.35	2.24	3.00
80	Powell River	23.34	11.57	5.07	7.01
81	Prince Albert	27.32	24.64	4.65	1.55
82	Prince George	11.11	8.22	5.53	.00
83	Prince Rupert	9.43	8.22	3.57	.00
84	Rimouski	.00	.00	.00	.00
85	Riviere du Loup	.00	.00	.00	.00
86	Rouyn	3.02	5.90	.00	.00
87	St. Georges	.00	.00	.00	.00
88	St. Hyacinthe	.17	.00	.59	.00
89	St. Jean	.48	.96	.00	.00
90	St. Jerome	.86	.00	.75	1.07
91	Salaberry de Valleyfield	.00	.00	.00	.00
92	Sarnia	.04	.09	.00	.00
93	Sault Ste. Marie	.16	.08	.14	.00
94	Sept Ilses	.00	.00	.00	.00
95	Shawinigan	.31	.62	.00	.00
96	Sherbrooke	.03	.00	.00	.00
97	Smith Falls	5.47	11.20	.00	.00

98	Sorel	1.79	.39	.69	.99
99	Stratford	.44	.00	1.53	.00
100	Summerside	1.46	2.89	.00	.00
101	Swift Current	.00	.00	.00	.00
102	Sydney	1.03	.64	.70	.00
103	Sydney Mines	.57	1.13	.00	.00
104	Terrace	21.12	40.51	.00	.00
105	Thetford Mines	.00	.00	.00	.00
106	Thompson	2.76	1.34	2.27	.00
107	Trail	14.56	30.11	.00	.00
108	Trenton	1.35	2.64	.00	.00
109	Truro	11.78	3.84	1.63	8.54
110	Val d'Or	18.84	1.46	2.64	33.96
111	Vernon	.88	.00	.00	.00
112	Victoriaville	.00	.00	.00	.00

Appendix B.3

Average Homicide Rates by Victim and Offender Relationship in Census Metropolitan Areas and Census Agglomeration Areas, 1972-76

CMA/CA		Total	Fam	Acq	Str
1	Calgary	1.66	.90	.18	.58
2	Chicoutimi-Jonquiere	1.71	.93	.62	.16
3	Edmonton	2.63	1.05	1.05	.54
4	Halifax	1.72	.65	.41	.65
5	Hamilton	1.51	.71	.59	.21
6	Kitchener-Waterloo	.44	.15	.07	.22
7	London	2.74	1.41	.50	.83
8	Montreal	3.05	1.02	1.10	.94
9	Oshawa	1.18	1.01	.00	.17
10	Ottawa	1.15	.49	.33	.33
11	Quebec City	1.62	.39	.64	.59
12	Regina	4.23	1.32	1.85	1.06
13	St. Catherines	1.19	.70	.35	.14
14	St. John's	.70	.14	.28	.28
15	St. John	2.48	.95	1.14	.38
16	Saskatoon	2.84	1.10	.63	1.10
17	Sudbury	2.04	1.53	.51	.00
18	Thunder Bay	4.53	3.02	.75	.75
19	Toronto	1.61	.84	.44	.33
20	Trois Rivieres	1.01	.61	.00	.41
21	Vancouver	3.41	1.18	1.27	.97
22	Victoria	1.47	.84	.21	.42
23	Windsor	2.02	.46	.83	.73
24	Winnipeg	2.35	1.21	.81	.33
25	Asbestos	.00	.00	.00	.00
26	Baie Comeau	2.25	1.13	.00	1.13
27	Barrie	6.09	2.81	1.41	1.88
28	Bathhurst	1.03	.00	.00	1.03
29	Belleville	6.80	4.25	2.55	.00
30	Brantford	.97	.00	.97	.00
31	Brockville	3.72	2.98	.00	.74
32	Cambellton	1.79	.00	.00	1.79
34	Charlottetown	.00	.00	.00	.00
35	Chatham	8.73	4.91	1.64	2.18
36	Chilliwack	2.66	1.60	1.07	.00
37	Cobourg	4.94	1.65	3.29	.00
38	Corner Brook	.79	.79	.00	.00
39	Cornwall	.43	.43	.00	.00
40	Courtenay	4.21	.00	4.21	.00
41	Dolbeau	2.87	2.87	.00	.00
42	Drummondville	3.11	1.55	1.55	.00
43	Edmundston	2.52	1.26	1.26	.00
44	Fergus	.00	.00	.00	.00

45	Flin Flon	1.94	.00	.00	1.94
46	Fredericton	2.21	.88	.00	1.33
47	Granby	1.93	1.93	.00	.00
49	Guelph	.28	.00	.00	.28
50	Haileybury	1.59	.00	.00	1.59
51	Hawkesbury	3.54	3.54	.00	.00
52	Joliette	2.66	.89	.89	.89
53	Kamloops	4.80	2.00	2.00	.80
54	Kelowna	2.69	1.54	.38	.77
55	Kenora	44.73	29.82	14.91	.00
56	Kentville	.00	.00	.00	.00
57	Kingston	4.19	1.76	1.76	.66
58	La Tuque	.00	.00	.00	.00
59	Labrador City	.00	.00	.00	.00
60	Lachute	.00	.00	.00	.00
61	Leamington	.00	.00	.00	.00
62	Lindsay	1.53	1.53	.00	.00
63	Magog	.00	.00	.00	.00
64	Medicine Hat	2.20	1.65	.00	.55
65	Midland	.76	.00	.00	.76
66	Moncton	1.55	.77	.00	.77
67	Moose Jaw	2.30	1.72	.57	.00
68	Nanaimo	2.73	2.48	.25	.00
69	New Glasgow	3.40	1.70	1.70	.00
70	North Battleford	1.24	1.24	.00	.00
71	North Bay	4.08	1.48	.74	1.85
72	Orillia	.65	.00	.65	.00
73	Oromocto	.00	.00	.00	.00
74	Owen Sound	3.07	1.02	.00	2.05
75	Pembroke	3.25	2.17	.00	1.08
77	Peterborough	4.90	3.39	.75	.75
78	Port Alberni	1.13	.00	1.13	.00
79	Portage la Prairie	6.08	3.04	3.04	.00
80	Powell River	1.46	1.46	.00	.00
81	Prince Albert	6.29	3.14	1.57	1.57
82	Prince George	2.67	1.00	.67	1.00
83	Prince Rupert	5.42	1.36	2.71	1.36
84	Rimouski	3.31	.83	1.65	.83
85	Riviere du Loup	4.58	3.05	.00	1.53
86	Rouyn	2.91	2.91	.00	.00
87	St. Georges	3.98	2.65	1.33	.00
88	St. Hyacinthe	2.49	.62	1.24	.62
89	St. Jean	.79	.00	.40	.40
90	St. Jerome	1.64	.55	.55	.55
91	Salaberry de Valleyfield	.00	.00	.00	.00
92	Sarnia	.74	.49	.25	.00
93	Sault Ste. Marie	1.71	.98	.49	.24
94	Sept Ilses	2.61	1.31	.65	.65
95	Shawinigan	2.17	.43	.43	1.30
96	Sherbrooke	1.91	1.06	.85	.00
97	Smith falls	1.50	.00	.00	.00
98	Sorel	.54	.00	.00	.00

99	Stratford	1.56	.00	.78	.78
100	Summerside	1.41	1.41	.00	.00
101	Swift current	.00	.00	.00	.00
102	Sydney	2.14	1.02	.23	.90
103	Sydney mines	.28	.28	.00	.00
104	Terrace	9.33	6.22	3.11	.00
105	Thetford Mines	1.39	1.39	.00	.00
106	Thompson	6.94	1.16	2.31	3.47
107	Trail	.00	.00	.00	.00
108	Trenton	.61	.61	.00	.00
109	Truro	2.90	2.18	.73	.00
110	Val d'Or	6.55	3.93	1.31	1.31
111	Vernon	2.66	2.66	.00	.00
112	Victoriaville	.00	.00	.00	.00

Appendix B.3

Average Age and Sex-Standardized Homicide Rates
by Victim and Offender Relationship in
Census Metropolitan Areas and Census Agglomeration Areas
1972-76

CMA/CA		Total	Fam	Acq	Str
1	Calgary	1.23	.78	.05	.70
2	Chicoutimi-Jonquiere	1.34	.86	.56	.05
3	Edmonton	3.12	1.06	1.54	.61
4	Halifax	1.34	.42	.24	.89
5	Hamilton	1.04	.50	.51	.09
6	Kitchener-Waterloo	.09	.02	.01	.10
7	London	3.40	1.94	.36	1.41
8	Montreal	4.18	1.00	1.71	1.80
9	Oshawa	.64	1.01	.00	.06
10	Ottawa	.60	.24	.15	.23
11	Quebec City	1.19	.15	.59	.73
12	Regina	8.26	1.74	5.06	2.30
13	St. Catherines	.66	.49	.18	.04
14	St. John's	.23	.02	.12	.17
15	St. John	2.91	.93	1.99	.31
16	Saskatoon	3.70	1.21	.59	2.47
17	Sudbury	1.95	2.36	.38	.00
18	Thunder Bay	9.36	9.11	.83	1.13
19	Toronto	1.15	.67	.27	.22
20	Trois Rivieres	.46	.36	.00	.34
21	Vancouver	5.17	1.33	2.27	1.86
22	Victoria	.98	.70	.07	.33
23	Windsor	1.91	.21	1.03	1.11
24	Winnipeg	2.52	1.45	.96	.22
25	Asbestos	.00	.00	.00	.00
26	Baie Comeau	2.31	1.24	.00	2.76
27	Barrie	17.37	7.93	2.99	7.34
28	Bathhurst	.50	.00	.00	2.29
29	Belleville	21.44	18.17	9.78	.00
30	Brantford	.43	.00	1.40	.00
31	Brockville	6.40	8.87	.00	1.11
32	Cambellton	1.52	.00	.00	6.58
34	Charlottetown	.00	.00	.00	.00
35	Chatham	35.69	24.37	4.04	9.87
36	Chilliwack	6.01	3.95	3.91	.00
37	Cobourg	11.36	2.75	16.28	.00
38	Corner brook	.30	.65	.00	.00
39	Cornwall	.09	.19	.00	.00
40	Courtenay	8.14	.00	25.75	.00
41	Dolbeau	3.86	8.36	.00	.00
42	Drummondville	4.38	2.39	3.47	.00
43	Edmundston	2.99	1.61	2.42	.00

44	Fergus	.00	.00	.00	.00
45	Flin Flon	1.74	.00	.00	7.60
46	Fredericton	2.23	.77	.00	3.65
47	Granby	1.69	3.67	.00	.00
49	Guelph	.04	.00	.00	.16
50	Haileybury	1.21	.00	.00	5.23
51	Hawkesbury	5.79	12.55	.00	.00
52	Joliette	3.16	.75	1.12	1.59
53	Kamloops	10.60	3.91	5.82	1.38
54	Kelowna	3.41	2.43	.23	1.17
55	Kenora	923.32	909.42	329.44	.00
56	Kentville	.00	.00	.00	.00
57	Kingston	7.77	3.02	4.30	.87
58	La Tuque	.00	.00	.00	.00
59	Labrador City	.00	.00	.00	.00
60	Lachute	.00	.00	.00	.00
61	Leamington	.00	.00	.00	.00
62	Lindsay	1.11	2.42	.00	.00
63	Magog	.00	.00	.00	.00
64	Medicine Hat	2.24	2.78	.00	.60
65	Midland	.27	.00	.00	1.17
66	Moncton	1.12	.60	.00	1.25
67	Moose Jaw	2.45	3.04	.50	.00
68	Nanaimo	3.40	6.12	.09	.00
69	New Glasgow	5.52	3.04	4.47	.00
70	North Battleford	.73	1.61	.00	.00
71	North Bay	7.86	2.22	.83	7.35
72	Orillia	.19	.00	.62	.00
73	Oromocto	.00	.00	.00	.00
74	Owen Sound	4.42	1.07	.00	8.30
75	Pembroke	5.00	4.87	.00	2.34
77	Peterborough	11.12	11.60	.85	1.14
78	Port Alberni	.59	.00	1.85	.00
79	Portage la Prairie	17.37	9.59	13.93	.00
80	Powell River	1.01	2.19	.00	.00
81	Prince Albert	19.01	10.24	3.89	5.16
82	Prince George	3.28	.98	.64	2.24
83	Prince Rupert	13.19	1.79	10.15	3.84
84	Rimouski	4.95	.66	3.96	1.42
85	Riviere du Loup	9.45	8.98	.00	4.73
86	Rouyn	3.88	8.40	.00	.00
87	St. Georges	7.31	6.96	2.58	.00
88	St. Hyacinthe	2.83	.38	2.29	.77
89	St. Jean	.28	.00	.22	.32
90	St. Jerome	1.22	.29	.43	.62
91	Salaberry de Valleyfield	.00	.00	.00	.00
92	Sarnia	.25	.24	.09	.00
93	Sault Ste. Marie	1.36	.96	.35	.13
94	Sept Ilses	3.07	1.64	.58	.94
95	Shawinigan	2.10	.19	.27	3.30
96	Sherbrooke	1.68	1.11	1.06	.00
97	Smith Falls	1.02	.00	.00	.00

98	Sorel	.13	.00	.00	.00
99	Stratford	1.12	.00	.90	1.22
100	Summerside	.96	2.07	.00	.00
101	Swift Current	.00	.00	.00	.00
102	Sydney	2.21	1.09	.08	1.68
103	Sydney Mines	.04	.09	.00	.00
104	Terrace	40.57	38.62	13.96	.00
105	Thetford Mines	.88	1.90	.00	.00
106	Thompson	22.00	1.30	7.34	28.03
107	Trail	.00	.00	.00	.00
108	Trenton	.17	.37	.00	.00
109	Truro	4.00	4.90	.81	.00
110	Val d'Or	19.72	15.35	2.48	3.61
111	Vernon	3.28	7.14	.00	.00
112	Victoriaville	.00	.00	.00	.00

Appendix B.5

Average Homicide Rates by Victim and Offender Relationship in Census Metropolitan Areas and Census Agglomeration Areas, 1977-81

CMA/CA		Total	Fam	Acq	Str
1	Calgary	2.26	.73	.80	.73
2	Chicoutimi-Jonquiere	1.24	.71	.53	.00
3	Edmonton	2.53	.98	.77	.77
4	Halifax	1.58	.53	.68	.38
5	Hamilton	1.66	.54	.71	.42
6	Kitchener-Waterloo	.97	.63	.21	.14
7	London	2.12	.65	.57	.89
8	Montreal	2.67	.92	1.02	.73
9	Oshawa	.78	.52	.00	.26
10	Ottawa	1.17	.25	.44	.47
11	Quebec City	1.11	.37	.49	.25
12	Regina	4.87	2.00	1.75	1.12
13	St. Catherines	1.38	.61	.31	.46
14	St. John's	1.16	.50	.33	.33
15	St. John	2.46	.57	1.13	.76
16	Saskatoon	3.50	1.30	1.17	1.04
17	Sudbury	2.40	1.35	.60	.45
18	Thunder Bay	2.14	.66	.33	1.15
19	Toronto	1.73	.68	.56	.50
20	Trois Rivieres	1.44	.48	.72	.24
21	Vancouver	3.28	1.20	1.12	.96
22	Victoria	1.20	.26	.60	.34
23	Windsor	2.68	1.01	.92	.75
24	Winnipeg	2.67	.95	.95	.76
25	Asbestos	.00	.00	.00	.00
26	Baie Comeau	4.75	2.37	1.58	.79
27	Barrie	2.61	2.24	.00	.37
28	Bathhurst	.82	.82	.00	.00
29	Belleville	2.16	.86	.86	.43
30	Brantford	1.58	.68	.23	.68
31	Brockville	1.12	.56	.56	.00
32	Cambellton	2.58	.00	1.29	1.29
34	Charlottetown	.44	.00	.00	.44
35	Chatham	2.12	.53	1.59	.00
36	Chilliwack	8.20	2.89	1.93	2.89
37	Cobourg	.99	.99	.00	.00
38	Corner brook	.00	.00	.00	.00
39	Cornwall	1.12	.75	.00	.37
40	Courtenay	.57	.00	.57	.00
41	Dolbeau	.00	.00	.00	.00
42	Drummondville	.73	.00	.37	.37
43	Edmundston	7.31	6.39	.91	.00
44	Fergus	1.65	.00	.00	1.65

45	Flin Flon	2.02	.00	2.02	.00
46	Fredericton	.62	.62	.00	.00
47	Granby	.44	.00	.00	.44
49	Guelph	1.27	.96	.32	.00
50	Haileybury	1.51	1.51	.00	.00
51	Hawkesbury	8.85	5.31	1.77	1.77
52	Joliette	.00	.00	.00	.00
53	Kamloops	3.38	2.03	1.35	.00
54	Kelowna	1.55	1.29	.00	.26
55	Kenora	2.57	2.57	.00	.00
56	Kentville	.00	.00	.00	.00
57	Kingston	1.74	.70	.52	.52
58	La Tuque	.00	.00	.00	.00
59	Labrador City	.00	.00	.00	.00
60	Lachute	3.31	.00	3.31	.00
61	Leamington	.00	.00	.00	.00
62	Lindsay	1.19	1.19	.00	.00
63	Magog	1.10	.00	1.10	.00
64	Medicine Hat	2.42	1.21	1.21	.00
65	Midland	1.18	.59	.00	.59
66	Moncton	1.42	.81	.41	.20
67	Moose Jaw	1.66	.55	1.11	.00
68	Nanaimo	3.81	1.39	1.39	1.04
69	New Glasgow	1.01	.51	.51	.00
70	North Battleford	2.14	.00	.00	2.14
71	North Bay	1.40	.93	.00	.47
72	Orillia	1.94	.00	1.30	.65
73	Oromocto	.00	.00	.00	.00
74	Owen Sound	.73	.73	.00	.00
75	Pembroke	.00	.00	.00	.00
77	Peterborough	2.10	.93	.70	.47
78	Port Alberni	.61	.00	.00	.00
79	Portage la Prairie	2.90	1.93	.97	.00
80	Powell River	3.10	1.03	.00	2.07
81	Prince Albert	3.65	1.57	2.09	.00
82	Prince George	2.66	1.67	.67	.33
83	Prince Rupert	4.35	1.09	2.17	1.09
84	Rimouski	1.60	.53	.00	1.07
85	Riviere du Loup	.00	.00	.00	.00
86	Rouyn	6.28	2.51	3.77	.00
87	St. Georges	2.13	2.13	.00	.00
88	St. Hyacinthe	2.11	1.05	.53	.53
89	St. Jean	2.64	.88	.88	.88
90	St. Jerome	10.51	.81	8.08	1.62
91	Salaberry de Valleyfield	.00	.00	.00	.00
92	Sarnia	.95	.48	.24	.24
93	Sault Ste. Marie	1.15	.69	.23	.23
94	Sept Ilses	3.99	1.60	1.60	.80
95	Shawinigan	2.55	1.09	.73	.73
96	Sherbrooke	1.19	.20	.40	.60
97	Smith Falls	.00	.00	.00	.00
98	Sorel	2.98	1.19	1.19	.60

99	Stratford	.00	.00	.00	.00
100	Summerside	2.68	.00	.00	2.68
101	Swift Current	1.36	1.36	.00	.00
102	Sydney	1.03	.11	.80	.11
103	Sydney Mines	1.41	.85	.28	.28
104	Terrace	1.85	.62	1.23	.00
105	Thetford Mines	.58	.58	.00	.00
106	Thompson	.00	.00	.00	.00
107	Trail	2.62	.00	1.74	.87
108	Trenton	.00	.00	.00	.00
109	Truro	2.12	.53	1.59	.00
110	Val d'Or	4.26	1.42	2.84	.00
111	Vernon	1.90	.47	.95	.47
112	Victoriaville	.00	.00	.00	.00

Appendix B.3

Average Age and Sex-Standardized Homicide Rates
by Victim and Offender Relationship in
Census Metropolitan Areas and Census Agglomeration Areas
1977-81

CMA/CA		Total	Fam	Acq	Str
1	Calgary	2.19	.58	.76	.94
2	Chicoutimi-Jonquiere	.70	.56	.37	.00
3	Edmonton	2.79	1.08	.72	1.05
4	Halifax	1.13	.31	.60	.26
5	Hamilton	1.26	.33	.66	.31
6	Kitchener-Waterloo	.44	.45	.06	.04
7	London	2.04	.48	.43	1.44
8	Montreal	3.18	.93	1.35	.95
9	Oshawa	.28	.30	.00	.12
10	Ottawa	.61	.07	.25	.41
11	Quebec City	.55	.15	.32	.11
12	Regina	10.92	4.55	4.09	2.31
13	St. Catherines	.89	.44	.13	.38
14	St. John's	.63	.29	.15	.21
15	St. John	2.84	.37	1.78	1.06
16	Saskatoon	5.57	1.90	1.79	1.94
17	Sudbury	2.69	2.12	.49	.38
18	Thunder Bay	2.10	.50	.14	2.35
19	Toronto	1.28	.48	.38	.43
20	Trois Rivieres	.93	.25	.67	.10
21	Vancouver	4.80	1.61	1.63	1.60
22	Victoria	.66	.08	.49	.20
23	Windsor	3.37	1.18	1.17	1.03
24	Winnipeg	3.27	1.04	1.22	1.04
25	Asbestos	.00	.00	.00	.00
26	Baie Comeau	9.98	6.20	3.11	1.15
27	Barrie	3.18	5.76	.00	.25
28	Bathhurst	.32	.79	.00	.00
29	Belleville	2.18	.87	1.02	.33
30	Brantford	1.18	.54	.07	.84
31	Brockville	.59	.37	.43	.00
32	Cambellton	3.11	.00	2.27	3.00
34	Charlottetown	.09	.00	.00	.37
35	Chatham	2.11	.32	3.49	.00
36	Chilliwack	43.00	13.40	7.08	23.70
37	Cobourg	.46	1.15	.00	.00
38	Corner Brook	.00	.00	.00	.00
39	Cornwall	.59	.66	.00	.25
40	Courtenay	.15	.00	.43	.00
41	Dolbeau	.00	.00	.00	.00
42	Drummondville	.24	.00	.18	.24
43	Edmundston	24.97	47.24	1.14	.00

44	Fergus	1.30	.00	.00	4.97
45	Flin Flon	1.87	.00	5.32	.00
46	Fredericton	.18	.44	.00	.00
47	Granby	.09	.00	.00	.34
49	Guelph	.74	1.04	.13	.00
50	Haileybury	1.10	2.73	.00	.00
51	Hawkesbury	35.77	32.65	4.09	5.60
52	Joliette	.00	.00	.00	.00
53	Kamloops	5.19	4.63	2.38	.00
54	Kelowna	1.13	1.96	.00	.12
55	Kenora	3.08	7.84	.00	.00
56	Kentville	.00	.00	.00	.00
57	Kingston	1.36	.55	.35	.48
58	La Tuque	.00	.00	.00	.00
59	Labrador City	.00	.00	.00	.00
60	Lachute	5.06	.00	14.93	.00
61	Leamington	.00	.00	.00	.00
62	Lindsay	.67	1.68	.00	.00
63	Magog	.56	.00	1.62	.00
64	Medicine Hat	2.70	1.69	1.95	.00
65	Midland	.65	.41	.00	.62
66	Moncton	.94	.76	.22	.08
67	Moose jaw	1.30	.36	1.70	.00
68	Nanaimo	6.63	2.19	2.56	1.92
69	New Glasgow	.49	.31	.37	.00
70	North Battleford	2.20	.00	.00	8.29
71	North Bay	.91	1.01	.00	.40
72	Orillia	1.77	.00	2.31	.74
73	Oromocto	.00	.00	.00	.00
74	Owen Sound	.25	.63	.00	.00
75	Pembroke	.00	.00	.00	.00
77	Peterborough	2.07	1.02	.68	.39
78	Port Alberni	.17	.00	.00	.00
79	Portage la Prairie	3.93	4.40	1.28	.00
80	Powell River	4.44	1.25	.00	7.63
81	Prince Albert	6.33	2.90	6.05	.00
82	Prince George	3.20	3.07	.57	.21
83	Prince Rupert	8.44	1.33	5.90	2.16
84	Rimouski	1.15	.31	.00	2.09
85	Riviere du Loup	.00	.00	.00	.00
86	Rouyn	17.89	7.12	18.52	.00
87	St. Georges	2.08	5.06	.00	.00
88	St. Hyacinthe	2.04	1.26	.38	.50
89	St. Jean	3.11	.86	.98	1.38
90	St. Jerome	49.36	.72	83.83	4.70
91	Salaberry de Valleyfield	.00	.00	.00	.00
92	Sarnia	.42	.26	.08	.10
93	Sault Ste. Marie	.61	.55	.07	.10
94	Sept Ilses	7.14	2.81	3.22	1.19
95	Shawinigan	2.92	1.35	.69	.93
96	Sherbrooke	.65	.04	.21	.65
97	Smith Falls	.00	.00	.00	.00

98	Sorel	3.96	1.57	1.82	.64
99	Stratford	.00	.00	.00	.00
100	Summerside	3.39	.00	.00	13.21
101	Swift Current	.87	2.19	.00	.00
102	Sydney	.51	.02	.90	.02
103	Sydney Mines	.97	.87	.11	.15
104	Terrace	1.55	.43	1.93	.00
105	Thetford Mines	.15	.37	.00	.00
106	Thompson	.00	.00	.00	.00
107	Trail	3.13	.00	4.01	1.33
108	Trenton	.00	.00	.00	.00
109	Truro	2.12	.33	3.50	.00
110	Val d'Or	8.14	2.26	10.29	.00
111	Vernon	1.69	.26	1.26	.41
112	Victoriaville	.00	.00	.00	.00

Appendix C

Age and Sex-Specific Murder Rates Per 100,000 Persons in Canada by Victim and Offender Relationship, 1971 to 1981

1971

	Male				Female			
Age Group	Tot	Fam	Acq	Str	Tot	Fam	Acq	Str
0-4	.88	.71	.11	.06	.77	.65	.07	.05
5-9	.29	.24	.02	.04	.29	.22	.02	.04
10-14	.17	.10	.02	.05	.28	.10	.03	.15
15-19	1.36	.42	.62	.32	1.29	.69	.19	.41
20-24	2.31	.62	1.15	.55	1.82	1.26	.29	.27
25-34	3.20	1.19	1.33	.68	1.95	1.64	.16	.14
35-44	2.69	1.12	1.03	.54	1.68	1.46	.17	.05
45-54	2.51	.96	.86	.70	1.29	1.01	.23	.06
55-64	1.99	.65	.74	.60	.91	.47	.25	.20
65-69	2.23	.24	.96	1.04	.62	.31	.19	.12
70 +	2.31	.34	.74	1.23	1.03	.36	.28	.40

1976

	Male				Female			
Age Group	Tot	Fam	Acq	Str	Tot	Fam	Acq	Str
0-4	.95	.83	.09	.02	1.00	.84	.13	.03
5-9	.50	.35	.10	.04	.37	.12	.07	.17
10-14	.24	.14	.05	.05	.49	.12	.10	.26
15-19	1.91	.42	.91	.59	1.98	.91	.41	.67
20-24	4.50	1.08	2.15	1.27	2.23	1.50	.30	.42
25-34	4.03	1.22	1.99	.81	2.38	1.90	.34	.14
35-44	4.53	1.72	1.89	.92	2.28	1.91	.29	.08
45-54	3.62	1.33	1.27	1.03	1.60	1.29	.17	.15
55-64	3.30	.79	1.46	1.05	1.34	.99	.12	.24
65-69	2.12	.42	.49	1.21	.84	.42	.07	.35
70 +	3.09	1.15	.58	1.36	1.18	.50	.21	.47

1981

	Male				Female			
Age Group	Tot	Fam	Acq	Str	Tot	Fam	Acq	Str
0-4	1.31	1.08	.09	.14	1.22	.99	.05	.18
5-9	.53	.33	.09	.11	.44	.23	.05	.16
10-14	.43	.22	.16	.04	.49	.20	.03	.26
15-19	2.23	.50	1.05	.68	1.57	.49	.49	.59
20-24	4.02	.69	2.36	.97	2.55	1.41	.65	.48
25-34	4.14	1.05	2.00	1.09	2.09	1.45	.29	.34
35-44	4.30	1.37	2.00	.93	2.03	1.60	.24	.19
45-54	3.58	.84	1.58	1.16	1.48	1.04	.26	.19
55-64	2.79	.62	1.12	1.06	1.29	.87	.20	.22
65-69	2.41	.72	.54	1.14	.97	.47	.15	.34
70 +	2.29	.55	.47	1.27	1.18	.55	.17	.46

Appendix D.1 Correlation Matrix for the Independent Variables in 1971 in the Full 109 City Data Set

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	POP71L														
2.	DEN71	.47													
3.	DIV71P	.34	.06												
4.	CVINC71	.39	-.03	.38											
5.	GINI71	.16	-.16	.02	.47										
6.	BRIT71EP	.02	-.17	.57	.16	-.08									
7.	FREN71EP	-.13	.04	-.75	-.26	.10	-.90								
8.	ETH71EP	.25	.20	.68	.30	-.08	.26	-.65							
9.	ENGL71LP	.07	-.12	.70	.21	-.08	.96	-.98	.49						
10.	FREN71LP	-.11	.06	-.74	-.25	.09	-.90	.99	-.64	-.98					
11.	ETH71LP	.22	.20	.53	.28	-.11	.16	-.54	.92	.36	-.54				
12.	POL71R	.28	.24	.05	.38	.23	-.14	.05	.14	-.11	.06	.16			
13.	MUE71P	.01	.01	-.42	-.25	.16	-.54	.60	-.38	-.58	.60	-.35	-.08		
14.	FUE71P	-.01	-.06	-.29	-.03	.06	-.40	.40	-.18	-.41	.40	-.17	-.16	.72	
15.	UE71P	.01	-.02	-.38	-.18	.15	-.52	.55	-.32	-.55	.56	-.29	-.12	.96	.88
16.	MLF71P	.22	.04	.52	.54	-.15	.44	-.58	.52	.53	-.58	.47	.27	-.64	-.26
17.	FLF71P	.38	.12	.65	.44	.22	.43	-.56	.49	.52	-.56	.39	.24	-.53	-.48
18.	LF71P	.29	.08	.63	.56	-.04	.47	-.64	.59	.58	-.64	.52	.27	-.68	-.39
19.	M2034_71	.07	.13	-.20	.20	-.12	-.24	.24	-.10	-.25	.24	-.05	.24	-.21	-.17
20.	F2034_71	.10	.14	-.22	.20	-.14	-.28	.28	-.13	-.28	.28	-.10	.22	-.15	-.13
21.	T2034_71	.09	.14	-.21	.20	-.13	-.26	.26	-.12	-.27	.26	-.08	.23	-.18	-.15
22.	ELDER71M	-.08	-.04	.40	-.18	.19	.32	-.39	.31	.37	-.39	.25	-.10	-.10	-.23
23.	ELDER71F	-.01	-.02	.37	-.14	.21	.41	-.39	.15	.40	-.38	.09	-.07	-.18	-.31
24.	ELDER71T	-.04	-.03	.39	-.16	.20	.38	-.40	.22	.39	-.39	.16	-.09	-.15	-.28
25.	SEXR71	-.08	-.11	.01	.26	-.15	-.10	-.04	.26	-.01	-.06	.32	.03	-.09	.17
26.	DEP71Y	-.09	-.12	.02	.08	-.09	.13	-.11	.01	.13	-.12	.01	-.06	-.08	.05
27.	DEP71E	-.07	-.06	.40	-.15	.19	.43	-.44	.23	.44	-.43	.17	-.10	-.17	-.28
28.	DEP71T	-.11	-.14	.14	.04	-.04	.24	-.22	.07	.24	-.23	.05	-.09	-.13	-.02

Continued ...

Appendix D.1 continued.

		15	16	17	18	19	20	21	22	23	24	25	26	27
15.	UE71P													
16.	MLF71P	-.55												
17.	FLF71P	-.53	.52											
18.	LF71P	-.61	.92	.79										
19.	M2034_71	-.23	.24	.04	.24									
20.	F2034_71	-.18	.22	.01	.22	.96								
21.	T2034_71	-.20	.24	.03	.24	.99	.99							
22.	ELDER71M	-.13	-.23	.32	-.07	-.55	-.64	-.60						
23.	ELDER71F	-.21	-.19	.40	-.02	-.46	-.56	-.52	.94					
24.	ELDER71T	-.18	-.21	.37	-.04	-.50	-.60	-.56	.98	.99				
25.	SEXR71	-.01	.41	-.18	.27	.37	.37	.38	-.58	-.69	-.65			
26.	DEP71Y	-.05	.22	-.14	.09	-.35	-.30	-.33	-.25	-.32	-.29	.24		
27.	DEP71E	-.20	-.17	.35	-.02	-.60	-.69	-.65	.96	.96	.98	-.63	-.09	
28.	DEP71T	-.10	.17	-.04	.08	-.51	-.48	-.50	.01	-.05	-.03	.07	.96	.18

N of cases: 109

See Chapter 3 for variable definitions and Chapter 5 for means and standard deviations.

Appendix D.2 Correlation Matrix for the Independent Variables in 1976 in the Full 109 City Data Set

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	POP76L																
2.	DEN76	.49															
3.	MIGR76P	-.13	-.04														
4.	DIV76P	.43	.18	.22													
5.	LOPAR76P	.12	.03	-.43	.09												
6.	VIOL76R	.15	.08	.17	.39	-.02											
7.	PROP76R	.27	.03	.30	.60	.05	.64										
8.	CVINC76	.45	.11	.09	.37	-.33	.38	.32									
9.	GINI76	-.09	-.17	-.23	-.02	.45	-.13	-.03	-.24								
10.	BRIT76EP	.03	-.16	.34	.34	-.09	.38	.27	.14	-.20							
11.	FREN76EP	-.13	.03	-.37	-.50	.17	-.54	-.43	-.31	.21	-.90						
12.	ETH76EP	.25	.21	.23	.51	-.21	.53	.48	.44	-.11	.23	-.63					
13.	ENGL76LP	.06	-.10	.38	.44	-.15	.50	.39	.24	-.21	.95	-.98	.49				
14.	FREN76LP	-.13	.05	-.36	-.48	.17	-.54	-.42	-.30	.21	-.91	.99	-.60	-.99			
15.	ETH76LP	.43	.28	.11	.49	-.20	.48	.40	.48	-.10	.21	-.56	.88	.42	-.56		
16.	POL76R	.31	.23	-.16	.15	.07	.13	.05	.45	-.01	-.13	-.01	.22	-.05	-.01	.29	
17.	MUE76P	-.14	-.29	-.27	-.20	.43	-.26	-.21	-.36	.26	-.16	.33	-.44	-.27	.31	-.39	-.24
18.	FUE76P	-.27	-.23	-.01	-.21	-.15	-.21	-.21	-.07	-.01	-.05	.17	-.30	-.13	.16	-.26	-.29
19.	UE76P	-.17	-.25	-.20	-.20	.24	-.26	-.22	-.26	.18	-.13	.28	-.39	-.23	.26	-.33	-.26
20.	MLF76P	.24	.23	.45	.22	-.58	.20	.15	.56	-.47	.04	-.17	.30	.12	-.16	.27	.27
21.	FLF76P	.19	.30	.40	.34	-.09	.24	.32	.31	-.04	.26	-.41	.44	.37	-.41	.39	.24
22.	LF76P	.21	.30	.53	.32	-.43	.27	.28	.50	-.31	.19	-.36	.45	.32	-.36	.40	.27
23.	M2034_76	.19	.20	.21	-.10	-.31	-.15	-.15	.29	-.23	-.29	.31	-.18	-.32	.33	-.21	.16
24.	F2034_76	.18	.18	.27	-.08	-.34	-.12	-.10	.34	-.27	-.29	.27	-.10	-.29	.29	-.11	.18
25.	T2034_76	.19	.19	.25	-.09	-.33	-.13	-.13	.32	-.25	-.29	.30	-.14	-.31	.31	-.16	.17
26.	ELDER76M	-.13	-.07	-.11	.28	.31	.15	.20	-.26	.33	.27	-.33	.26	.31	-.32	.25	-.10
27.	ELDER76F	-.03	-.02	-.15	.26	.37	.09	.13	-.25	.29	.32	-.31	.12	.30	-.30	.17	-.06
28.	ELDER76T	-.08	-.04	-.13	.27	.35	.11	.16	-.25	.31	.30	-.32	.18	.30	-.31	.21	-.07
29.	SEXR76	-.15	-.13	.34	-.06	-.58	.19	.06	.32	-.36	.02	-.10	.20	.11	-.11	.12	-.09
30.	DEP76Y	-.26	-.21	.38	-.27	-.45	.11	-.05	.06	-.35	.30	-.27	.07	.32	-.30	.04	-.07
31.	DEP76E	-.11	-.07	-.10	.25	.32	.13	.16	-.26	.29	.34	-.36	.19	.34	-.35	.23	-.07
32.	DEP76T	-.35	-.26	.27	-.02	-.13	.22	.09	-.18	-.07	.59	-.58	.19	.34	-.35	.24	-.13

Continued ...

Appendix D.2 continued.

		17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
17.	MUE76P															
18.	FUE76P	.56														
19.	UE76P	.91	.83													
20.	MLF76P	-.49	-.09	-.39												
21.	FLF76P	-.48	-.39	-.43	.40											
22.	LF76P	-.56	-.25	-.46	.82	.84										
23.	M2034_76	-.12	-.02	-.14	.59	.09	.40									
24.	F2034_76	-.07	.04	-.08	.65	.13	.46	.95								
25.	T2034_76	-.10	.01	-.11	.63	.11	.44	.98	.99							
26.	ELDER76M	-.11	-.24	-.14	-.57	.13	-.27	-.75	-.81	-.79						
27.	ELDER76F	-.16	-.30	-.20	-.54	.15	-.25	-.67	-.76	-.73	.94					
28.	ELDER76T	-.15	-.28	-.18	-.56	.14	-.26	-.71	-.79	-.76	.98	.99				
29.	SEXR76	-.06	.32	.05	.54	-.10	.32	.40	.46	.44	-.61	-.72	-.69			
30.	DEP76Y	.04	.27	.11	.37	-.02	.25	.20	.34	.28	-.46	-.51	-.50	.59		
31.	DEP76E	-.15	-.26	-.17	-.55	.15	-.25	-.73	-.79	-.77	.97	.98	.99	-.67	-.42	
32.	DEP76T	-.09	.02	-.05	-.14	.12	.01	-.47	-.40	-.44	.44	.40	.42	-.04	.57	.51

N of cases: 109

See Chapter 3 for variable definitions and Chapter 5 for means and standard deviations.

Appendix D.3 Correlation Matrix for the Independent Variables in 1981 in the Full 109 City Data Set

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	POP81L																
2.	DEN81L	.47															
3.	MIGR81P	.02	-.12														
4.	DIV81P	.48	.25	.23													
5.	LOPAR81P	.20	.20	-.43	.28												
6.	VIOL81R	.13	-.27	.35	.21	-.02											
7.	PROP81R	.26	-.13	.39	.46	.09	.70										
8.	CVINC81	.43	.13	.31	.21	-.34	.40	.33									
9.	GINI81	-.22	-.07	-.13	.02	.21	-.20	-.14	-.61								
10.	BRIT81EP	.03	-.20	.26	-.04	-.35	.25	.15	.11	-.20							
11.	FREN81EP	-.15	.20	-.40	-.08	.43	-.44	-.36	-.31	.22	-.91						
12.	ETH81EP	.28	-.08	.43	.25	-.353	.56	.54	.51	-.13	.27	-.65					
13.	ENGL81LP	.07	-.23	.37	.01	-.40	.39	.29	.23	-.21	.95	-.98	.53				
14.	FREN81LP	-.15	.20	-.40	-.05	.42	-.44	-.35	-.30	.22	-.91	.99	-.64	-.99			
15.	ETH81LP	.45	.05	.35	.24	-.31	.49	.47	.55	-.16	.21	-.56	.90	.42	-.56		
16.	POL81R	.43	.23	.03	.23	.09	.36	.25	.53	-.31	-.05	-.13	.38	.06	-.12	.38	
17.	MUE81P	-.20	-.09	-.53	-.25	.48	-.30	-.33	-.45	.26	-.47	.65	-.65	-.60	.65	-.57	-.19
18.	FUE81P	-.38	-.19	-.36	-.31	.15	-.30	-.38	-.34	.16	-.39	.60	-.65	-.53	.59	-.60	-.30
19.	UE81P	-.29	-.14	-.50	-.29	.38	-.31	-.37	-.43	.24	-.46	.67	-.69	-.60	.66	-.62	-.25
20.	MLF81P	.25	.09	.50	.13	-.36	.34	.27	.73	-.37	.16	-.35	.51	.28	-.34	.47	.40
21.	FLF81P	.39	.17	.48	.26	-.12	.45	.45	.58	-.29	.26	-.46	.58	.39	-.46	.57	.45
22.	LF81P	.33	.11	.53	.20	-.27	.44	.39	.70	-.35	.23	-.44	.59	.36	-.43	.56	.45
23.	M2034_81	-.08	.07	.11	-.14	.18	-.07	-.14	-.07	-.06	-.28	.29	-.17	-.27	.29	-.21	.09
24.	F2034_81	-.06	.01	.10	-.16	.17	.05	-.02	.18	-.20	-.31	.27	-.07	-.26	.26	-.13	.24
25.	T2034_81	-.08	.04	.12	-.16	.18	-.01	-.08	.07	-.14	-.31	.30	-.12	-.28	.29	-.17	.18
26.	SEXR81	-.24	-.41	.34	-.19	-.43	.32	.08	.39	-.16	.04	-.13	.23	.11	-.13	.13	.12
27.	ELDER81M	-.11	-.02	-.06	.16	-.01	-.10	.07	-.42	.26	.31	-.31	.15	.31	-.30	.12	-.26
28.	ELDER81F	.01	.13	-.15	.16	.05	-.15	-.01	-.40	.21	.32	-.28	.08	.29	-.28	.10	-.19
29.	ELDER81T	-.04	.07	-.12	.16	.03	-.13	.03	-.41	.23	.31	-.29	.11	.30	-.29	.11	-.22
30.	DEP81Y	-.43	-.44	.14	-.50	-.36	.18	-.10	.08	-.15	.25	-.22	.05	.27	-.23	-.07	-.08
31.	DEP81E	-.08	.03	-.10	.12	-.01	-.12	.02	-.42	.23	.35	-.33	.12	.34	-.33	.11	-.23
32.	DEP81T	-.45	-.35	.03	-.32	-.32	.04	-.06	-.31	.08	.54	-.49	.16	.54	-.50	.04	-.29

Continued ...

Appendix D.3 continued.

		17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
17.	MUE81P															
18.	FUE81P	.77														
19.	UE81P	.96	.92													
20.	MLF81P	-.60	-.43	-.57												
21.	FLF81P	-.61	-.71	-.69	.76											
22.	LF81P	-.64	-.59	-.66	.93	.94										
23.	M2034_81	.16	.21	.19	.14	.06	.12									
24.	F2034_81	.23	.24	.24	.32	.19	.29	.78								
25.	T2034_81	.21	.24	.23	.25	.14	.22	.94	.95							
26.	SEXR81	-.12	.21	.01	.48	.08	.34	.28	.42	.38						
27.	ELDER81M	-.20	-.35	-.26	-.53	-.20	-.40	-.42	-.67	-.58	-.58					
28.	ELDER81F	-.21	-.40	-.29	-.48	-.12	-.34	-.40	-.70	-.59	-.70	.95				
29.	ELDER81T	-.20	-.38	-.28	-.50	-.16	-.37	-.41	-.69	-.60	-.66	.98	.99			
30.	DEP81Y	.01	.22	.09	.27	.01	.17	-.01	.28	.15	.50	-.40	-.46	-.44		
31.	DEP81E	-.21	-.38	-.29	-.49	-.15	-.36	-.43	-.69	-.60	-.63	.98	.99	.99	-.37	
32.	DEP81T	-.19	-.16	-.19	-.22	-.13	-.19	-.40	-.40	-.42	-.15	.56	.50	.53	.52	.60

N of cases: 109

See Chapter 3 for variable definitions and Chapter 5 for means and standard deviations.

Appendix D.4 Correlation Matrix for the Independent Variables in 1971 in the Large City Data Set

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	POP71L														
2.	DEN71	.60													
3.	DIV71P	.19	.09												
4.	CVINC71	.35	.12	.44											
5.	GINI71	-.49	-.25	-.22	-.64										
6.	BRIT71EP	-.04	-.17	.58	.39	-.15									
7.	FREN71EP	-.12	.01	-.77	-.45	.30	-.88								
8.	ETH71EP	.30	.26	.67	.32	-.37	.23	-.66							
9.	ENGL71LP	.02	-.10	.72	.43	-.24	.96	-.98	.49						
10.	FREN71LP	-.10	.03	-.76	-.45	.29	-.89	.99	-.64	-.98					
11.	ETH71LP	.36	.28	.62	.34	-.37	.20	-.62	.96	.45	-.60				
12.	POL71R	.39	.44	-.04	-.01	-.17	-.03	.04	-.02	-.04	.05	-.04			
13.	MUE71P	-.13	-.04	-.49	-.46	.33	-.51	.58	-.38	-.56	.58	-.38	-.16		
14.	FUE71P	-.15	-.08	-.37	-.24	.17	-.43	.44	-.23	-.45	.44	-.21	-.35	.87	
15.	UE71P	-.16	-.07	-.45	-.38	.28	-.49	.53	-.32	-.53	.54	-.32	-.25	.97	.96
16.	MLF71P	.29	.17	.58	.77	-.62	.49	-.63	.51	.59	-.63	.50	.09	-.71	-.50
17.	FLF71P	.32	.19	.61	.55	-.33	.52	-.63	.48	.60	-.63	.45	.21	-.72	-.62
18.	LF71P	.32	.18	.63	.72	-.52	.53	-.67	.54	.63	-.67	.52	.11	-.74	-.57
19.	M2034_71	.25	.26	-.09	.12	-.15	-.25	.23	-.08	-.24	.23	-.08	.20	-.33	-.44
20.	F2034_71	.29	.29	-.03	.20	-.21	-.22	.18	-.02	-.20	.18	-.03	.25	-.32	-.41
21.	T2034_71	.27	.27	-.06	.16	-.18	-.24	.21	-.05	-.22	.21	-.05	.23	-.33	-.43
22.	ELDER71M	-.23	-.08	.42	-.32	.31	.27	-.39	.38	.34	-.38	.36	-.13	-.13	-.12
23.	ELDER71F	-.14	-.04	.33	-.28	.29	.33	-.35	.20	.34	-.34	.20	.04	-.25	-.26
24.	ELDER71T	-.18	-.06	.38	-.30	.31	.31	-.37	.28	.34	-.36	.27	-.04	-.20	-.20
25.	SEXR71	-.01	-.08	.10	.34	-.36	-.01	-.11	.25	.07	-.12	.26	-.39	.04	.17
26.	DEP71Y	-.10	-.13	.02	.19	-.03	.22	-.13	-.08	.18	-.14	-.10	-.04	-.01	.01
27.	DEP71E	-.23	-.11	.38	-.26	.31	.38	-.42	.26	.40	-.41	.24	-.06	-.20	-.19
28.	DEP71T	-.15	-.15	.10	.13	.04	.29	-.22	-.02	.26	-.22	-.04	-.05	-.06	-.03

Continued ...

Appendix D.4 continued.

		15	16	17	18	19	20	21	22	23	24	25	26	27
15.	UE71P													
16.	MLF71P	-.64												
17.	FLF71P	-.70	.79											
18.	LF71P	-.69	.96	.93										
19.	M2034_71	-.40	.24	.29	.29									
20.	F2034_71	-.38	.32	.33	.36	.97								
21.	T2034_71	-.39	.29	.32	.33	.99	.99							
22.	ELDER71M	-.12	-.22	.03	-.13	-.41	-.49	-.46						
23.	ELDER71F	-.25	-.18	.16	-.06	-.24	-.35	-.30	.91					
24.	ELDER71T	-.19	-.20	.10	-.10	-.32	-.42	-.38	.97	.98				
25.	SEXR71	.09	.31	-.13	.19	.06	.12	.09	-.42	-.63	-.55			
26.	DEP71Y	-.01	.12	.03	.08	-.57	-.53	-.55	-.14	-.24	-.20	.03		
27.	DEP71E	-.19	-.18	.10	-.09	-.50	-.59	-.55	.95	.92	.96	-.54	.10	
28.	DEP71T	-.04	.08	.05	.06	-.65	-.63	-.65	.07	-.03	.01	-.09	.98	.31

N of cases: 54

See Chapter 3 for variable definitions and Chapter 5 for means and standard deviations.

Appendix D.5 Correlation Matrix for the Independent Variables in 1976 in the Large City City Data Set

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	POP76L																
2.	DEN76	.60															
3.	MIGR76P	-.12	-.03														
4.	DIV76P	.17	.20	.36													
5.	LOPAR76P	-.05	-.06	-.33	-.16												
6.	VIOL76R	.14	.19	.17	.37	-.15											
7.	PROP76R	.10	-.06	.42	.61	-.22	.63										
8.	CVINC76	.50	.29	.25	.39	-.39	.41	.39									
9.	GINI76	-.22	-.11	-.04	-.07	.20	-.36	-.11	-.56								
10.	BRIT76EP	-.03	-.16	.27	.28	-.04	.32	.27	.36	-.35							
11.	FREN76EP	-.14	-.01	-.34	-.47	.23	-.49	-.44	-.53	.34	-.89						
12.	ETH76EP	.33	.28	.27	.53	-.42	.51	.49	.53	-.15	.25	-.66					
13.	ENGL76LP	.03	-.08	.33	.41	-.15	.44	.41	.47	-.34	.95	-.98	.53				
14.	FREN76LP	-.13	.01	-.33	-.45	.21	-.48	-.44	-.53	.35	-.89	.99	-.66	-.99			
15.	ETH76LP	.53	.38	.18	.46	-.40	.46	.38	.56	-.19	.20	-.60	.95	.45	-.59		
16.	POL76R	.42	.48	-.15	.01	-.01	.01	-.14	.33	-.31	-.01	-.10	.21	.06	-.10	.25	
17.	MUE76P	-.29	-.35	-.15	-.16	.47	-.29	-.19	-.47	.33	.04	.16	-.40	-.08	.15	-.42	-.41
18.	FUE76P	-.47	-.37	-.15	-.19	.22	-.24	-.20	-.47	.32	-.01	.18	-.38	-.11	.17	-.41	-.43
19.	UE76P	-.35	-.34	-.17	-.19	.35	-.27	-.20	-.47	.32	.02	.16	-.39	-.09	.16	-.41	-.41
20.	MLF76P	.30	.33	.24	.28	-.44	.29	.25	.69	-.37	.02	-.18	.35	.12	-.17	.34	.36
21.	FLF76P	.33	.28	.43	.48	-.24	.33	.44	.61	-.28	.34	-.49	.48	.44	-.48	.46	.27
22.	LF76P	.34	.31	.38	.44	-.37	.34	.39	.71	-.34	.21	-.39	.48	.33	-.38	.46	.31
23.	M2034_76	.28	.27	-.03	.01	-.05	-.21	-.08	.16	.05	-.37	.38	-.20	-.40	.39	-.18	.22
24.	F2034_76	.32	.27	.12	.09	-.11	-.10	.06	.35	-.02	-.28	.24	-.05	-.26	.24	-.05	.20
25.	T2034_76	.31	.28	.05	.05	-.08	-.16	-.01	.26	.02	-.33	.31	-.12	-.33	.32	-.11	.21
26.	ELDER76M	-.24	-.10	.19	.31	-.01	.19	.21	-.31	.14	.23	-.29	.24	.26	-.28	.20	-.25
27.	ELDER76F	-.15	-.05	.11	.20	.16	.14	.08	-.28	.03	.28	-.24	.06	.24	-.23	.06	-.09
28.	ELDER76T	-.20	-.07	.15	.25	.10	.17	.13	-.30	.08	.26	-.27	.14	.26	-.25	.12	-.16
29.	SEXR76	.01	-.10	.09	.14	-.42	.10	.12	.36	-.09	-.07	-.11	.35	.07	-.12	.31	-.16
30.	DEP76Y	-.13	-.21	.13	-.18	-.20	.18	.08	.26	-.23	.42	-.42	.20	.47	-.44	.10	.01
31.	DEP76E	-.22	-.10	.17	.24	.08	.19	.15	-.29	.06	.31	-.32	.16	.31	-.30	.13	-.17
32.	DEP76T	-.30	-.26	.26	.04	-.11	.31	.19	-.02	-.14	.64	-.63	.31	.67	-.64	.20	-.14

Continued ...

Appendix D.5 continued.

		17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
17.	MUE76P															
18.	FUE76P	.81														
19.	UE76P	.95	.94													
20.	MLF76P	-.69	-.62	-.69												
21.	FLF76P	-.57	-.66	-.63	.74											
22.	LF76P	-.66	-.67	-.69	.92	.94										
23.	M2034_76	-.26	-.43	-.37	.53	.36	.46									
24.	F2034_76	-.23	-.39	-.32	.64	.47	.59	.91								
25.	T2034_76	-.25	-.42	-.35	.60	.43	.54	.98	.98							
26.	ELDER76M	.03	.10	.06	-.46	-.07	-.28	-.62	-.71	-.68						
27.	ELDER76F	-.09	-.08	-.09	-.38	.03	-.20	-.48	-.64	-.58	.90					
28.	ELDER76T	-.04	-.01	-.03	-.43	-.01	-.24	-.55	-.69	-.64	.97	.98				
29.	SEXR76	-.06	.12	.01	.32	-.05	.20	.09	.23	.17	-.42	-.63	-.56			
30.	DEP76Y	.09	.10	.11	.12	.05	.11	-.20	.04	-.08	-.35	-.45	-.42	.35		
31.	DEP76E	-.02	.01	-.01	-.44	-.02	-.25	-.60	-.71	-.67	.97	.97	.99	-.55	-.33	
32.	DEP76T	.06	.10	.09	-.27	.03	-.11	-.68	-.57	-.64	.51	.42	.47	-.15	.60	.55

N of cases: 54

See Chapter 3 for variable definitions and Chapter 5 for means and standard deviations.

Appendix D.6 Correlation Matrix for the Independent Variables in 1981 in the Large City Data Set

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	POP81L																
2.	DEN81L	.53															
3.	MIGR81P	.05	-.06														
4.	DIV81P	.14	.10	.62													
5.	LOPAR81P	.01	.08	-.49	.01												
6.	VIOL81R	.10	.01	.26	.26	-.16											
7.	PROP81R	-.02	-.18	.45	.36	-.19	.60										
8.	CVINC81	.56	.32	.42	.20	-.44	.42	.29									
9.	GINI81	-.11	-.12	-.07	.09	.18	-.18	-.02	-.50								
10.	BRIT81EP	-.02	-.24	.16	-.12	-.19	.32	.14	.29	-.36							
11.	FREN81EP	-.15	.15	-.33	-.03	.37	-.46	-.31	-.52	.31	-.89						
12.	ETH81EP	.35	.06	.44	.26	-.48	.47	.44	.63	-.09	.26	-.67					
13.	ENGL81LP	.03	-.22	.26	-.03	-.30	.43	.27	.42	-.32	.95	-.98	.54				
14.	FREN81LP	-.14	.16	-.31	-.02	.35	-.47	-.31	-.51	.31	-.89	.99	-.66	-.98			
15.	ETH81LP	.56	.20	.35	.22	-.42	.43	.35	.67	-.10	.20	-.57	.89	.41	-.57		
16.	POL81R	.59	.46	.07	.05	-.08	.21	-.11	.60	-.26	.08	-.26	.42	.20	-.27	.43	
17.	MUE81P	-.28	-.11	-.54	-.29	.62	-.23	-.24	-.69	.27	-.35	.60	-.71	-.51	.59	-.67	-.31
18.	FUE81P	-.46	-.16	-.44	-.26	.39	-.23	-.20	-.71	.32	-.46	.67	-.68	-.59	.66	-.66	-.43
19.	UE81P	-.38	-.14	-.51	-.29	.54	-.24	-.23	-.73	.31	-.41	.66	-.73	-.56	.65	-.69	-.38
20.	MLF81P	.36	.28	.36	.18	-.34	.20	.17	.76	-.23	.15	-.35	.51	.27	-.34	.47	.44
21.	FLF81P	.45	.30	.39	.25	-.22	.21	.24	.70	-.22	.33	-.51	.55	.44	-.51	.55	.39
22.	LF81P	.42	.29	.41	.23	-.30	.22	.22	.76	-.23	.26	-.47	.56	.39	-.46	.54	.43
23.	M2034_81	-.06	.19	.01	-.05	.14	-.32	-.31	-.02	-.11	-.26	.30	-.22	-.27	.30	-.28	.04
24.	F2034_81	-.05	.10	.13	-.07	.01	-.15	-.11	.20	-.17	-.06	.05	.01	-.02	.04	-.13	.12
25.	T2034_81	-.06	.14	.08	-.06	.06	-.24	-.21	.10	-.15	-.16	.17	-.10	-.13	.16	-.21	.09
26.	SEXR81	-.03	-.13	.30	.02	-.47	.21	.23	.33	-.01	.06	-.19	.31	.17	-.20	.21	.10
27.	ELDER81M	-.20	-.26	.07	.16	-.13	.08	.12	-.29	.02	.25	-.26	.13	.25	-.25	.11	-.30
28.	ELDER81F	-.07	-.05	-.11	.06	-.04	.01	-.06	-.26	-.06	.24	-.20	.02	.20	-.19	.06	-.16
29.	ELDER81T	-.13	-.14	-.03	.11	-.08	.04	.02	-.28	-.02	.25	-.22	.07	.22	-.22	.08	-.23
30.	DEP81Y	-.49	-.43	-.09	-.37	-.01	.22	.17	-.06	-.11	.36	-.28	.01	.38	-.30	-.21	-.11
31.	DEP81E	-.17	-.18	-.03	.08	-.10	.07	.04	-.28	-.04	.30	-.27	.08	.27	-.26	.08	-.23
32.	DEP81T	-.50	-.46	-.09	-.21	-.09	.22	.16	-.27	-.11	.51	-.43	.07	.50	-.43	-.09	-.27

Continued ...

Appendix D.6 continued.

		17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
17.	MUE81P															
18.	FUE81P	.86														
19.	UE81P	.97	.96													
20.	MLF81P	-.65	-.66	-.68												
21.	FLF81P	-.72	-.84	-.80	.85											
22.	LF81P	-.72	-.79	-.78	.95	.97										
23.	M2034_81	.11	.06	.09	.20	.13	.17									
24.	F2034_81	-.02	-.05	-.04	.41	.29	.36	.86								
25.	T2034_81	.04	.01	.02	.32	.22	.29	.96	.97							
26.	SEXR81	-.23	-.05	-.17	.43	.12	.29	.13	.36	.27						
27.	ELDER81M	-.08	-.07	-.07	-.59	-.28	-.43	-.48	-.59	-.56	-.46					
28.	ELDER81F	-.07	-.15	-.10	-.51	-.17	-.35	-.43	-.63	-.56	-.63	.91				
29.	ELDER81T	-.07	-.12	-.09	-.56	-.23	-.39	-.46	-.63	-.57	-.57	.97	.98			
30.	DEP81Y	.11	.12	.12	.05	-.05	-.01	.07	.29	.20	.24	-.18	-.27	-.24		
31.	DEP81E	-.08	-.12	-.09	-.55	-.23	-.39	-.47	-.61	-.57	-.54	.97	.97	.99	-.16	
32.	DEP81T	.02	-.01	.02	-.40	-.22	-.31	-.32	-.27	-.30	-.25	.64	.57	.62	.62	.67

N of cases: 54

See Chapter 3 for variable definitions and Chapter 5 for means and standard deviations.

Appendix D.7 Correlation Matrix for the Independent Variables in 1971 in the Small City Data Set

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	POP71L														
2.	DEN71	-.14													
3.	DIV71P	.05	-.23												
4.	CVINC71	.36	-.28	.28											
5.	GINI71	.47	-.30	-.01	.54										
6.	BRIT71EP	-.04	-.23	.61	.07	-.09									
7.	FREN71EP	.10	.17	-.76	-.17	.11	-.92								
8.	ETH71EP	-.16	.03	.65	.27	-.08	.27	-.63							
9.	ENGL71LP	-.05	-.21	.72	.12	-.08	.97	-.98	.48						
10.	FREN71LP	.09	.18	-.75	-.17	.10	-.92	.99	-.63	-.98					
11.	ETH71LP	-.22	.06	.44	.25	-.11	.12	-.46	.87	.28	-.47				
12.	POL71R	-.01	-.02	.02	.48	.31	-.23	.09	.22	-.18	.11	.26			
13.	MUE71P	.19	.02	-.44	-.26	.15	-.59	.66	-.43	-.64	.66	-.35	-.04		
14.	FUE71P	.22	-.08	-.31	.07	.03	-.47	.45	-.18	-.46	.45	-.17	.03	.47	
15.	UE71P	.24	-.01	-.43	-.21	.14	-.62	.66	-.40	-.65	.67	-.33	-.03	.97	.67
16.	MLF71P	-.08	-.17	.46	.48	-.13	.40	-.54	.51	.48	-.54	.43	.34	-.65	-.03
17.	FLF71P	.09	-.11	.60	.33	.30	.37	-.48	.45	.46	-.49	.31	.19	-.46	-.50
18.	LF71P	-.04	-.16	.59	.51	-.01	.43	-.60	.61	.54	-.60	.50	.33	-.70	-.24
19.	M2034_71	-.07	.04	-.31	.25	-.12	-.24	.24	-.12	-.25	.24	-.04	.26	-.12	.14
20.	F2034_71	-.05	.04	-.40	.21	-.14	-.32	.35	-.22	-.34	.35	-.15	.20	-.03	.20
21.	T2034_71	-.06	.04	-.36	.23	-.13	-.28	.30	-.17	-.30	.30	-.09	.23	-.08	.18
22.	ELDER71M	-.07	-.02	.43	-.17	.18	.36	-.40	.26	.39	-.39	.19	-.10	-.09	-.50
23.	ELDER71F	-.02	-.04	.43	-.14	.20	.46	-.41	.11	.44	-.41	.02	-.15	-.15	-.52
24.	ELDER71T	-.04	-.03	.44	-.15	.20	.42	-.41	.18	.43	-.41	.09	-.13	-.13	-.52
25.	SEXR71	.08	-.10	.03	.33	-.10	-.13	-.04	.35	-.03	-.06	.39	.22	-.15	.30
26.	DEP71Y	.09	-.07	.10	.10	-.10	.06	-.11	.14	.10	-.11	.12	-.06	-.14	.17
27.	DEP71E	-.03	-.05	.48	-.15	.19	.46	-.46	.22	.46	-.45	.12	-.14	-.16	-.51
28.	DEP71T	.08	-.09	.26	.05	-.05	.21	-.25	.21	.24	-.26	.16	-.11	-.20	.01

Continued ...

Appendix D.7 continued.

		15	16	17	18	19	20	21	22	23	24	25	26	27
15.	UE71P													
16.	MLF71P	-.57												
17.	FLF71P	-.50	.32											
18.	LF71P	-.66	.90	.67										
19.	M2034_71	-.10	.25	-.10	.24									
20.	F2034_71	-.01	.18	-.18	.15	.96								
21.	T2034_71	-.05	.22	-.14	.19	.99	.99							
22.	ELDER71M	-.17	-.25	.53	-.03	-.62	-.71	-.68						
23.	ELDER71F	-.23	-.22	.55	-.01	-.55	-.66	-.61	.95					
24.	ELDER71T	-.21	-.23	.55	-.02	-.59	-.69	-.65	.98	.99				
25.	SEXR71	-.08	.49	-.17	.38	.48	.46	.48	-.65	-.71	-.70			
26.	DEP71Y	-.09	.32	-.25	.14	-.22	-.16	-.19	-.34	-.37	-.36	.35		
27.	DEP71E	-.24	-.18	.53	.01	-.64	-.74	-.70	.97	.98	.99	-.67	-.21	
28.	DEP71T	-.17	.27	-.09	.15	-.43	-.39	-.41	-.04	-.06	-.05	.14	.95	.10

N of cases: 55

See Chapter 3 for variable definitions and Chapter 5 for means and standard deviations.

Appendix D.8 Correlation Matrix for the Independent Variables in 1976 in the Small City City Data Set

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	POP76L																
2.	DEN76	-.13															
3.	MIGR76P	-.07	.01														
4.	DIV76P	.11	-.19	.25													
5.	LOPAR76P	.07	.01	-.48	.13												
6.	VIOL76R	-.05	-.14	.20	.38	.02											
7.	PROP76R	.21	-.03	.28	.52	.12	.64										
8.	CVINC76	.25	-.19	.09	.19	-.45	.36	.19									
9.	GINI76	.26	-.22	-.38	.09	.60	.05	.05	-.10								
10.	BRIT76EP	-.02	-.21	.40	.45	-.14	.43	.26	.03	-.10							
11.	FREN76EP	.06	.16	-.42	-.57	.18	-.58	-.40	-.19	.10	-.91						
12.	ETH76EP	-.11	.03	.22	.46	-.16	.53	.43	.38	-.06	.20	-.60					
13.	ENGL76LP	-.07	-.20	.44	.52	-.17	.54	.36	.12	-.12	.95	-.97	.44				
14.	FREN76LP	.09	.19	-.42	-.54	.19	-.58	-.38	-.17	.11	-.92	.98	-.53	-.99			
15.	ETH76LP	-.19	-.02	.11	.37	-.20	.48	.32	.38	-.01	.20	-.52	.82	.40	-.52		
16.	POL76R	-.07	-.06	-.14	.07	.04	.16	.04	.42	.17	-.22	.10	.19	-.14	.10	.24	
17.	MUE76P	.13	-.23	-.37	-.23	.45	-.23	-.21	-.33	.20	-.30	.45	-.47	-.39	.42	-.37	-.15
18.	FUE76P	.06	-.02	.10	-.18	-.33	-.17	-.18	.17	-.27	-.07	.15	-.21	-.13	.14	-.07	-.19
19.	UE76P	.12	-.12	-.24	-.22	.21	-.26	-.22	-.17	.07	-.25	.37	-.39	-.33	.35	-.26	-.18
20.	MLF76P	-.05	.08	.63	.06	-.71	.11	.03	.48	-.53	.03	-.13	.24	.11	-.12	.15	.18
21.	FLF76P	-.08	.31	.41	.22	-.07	.17	.22	.17	.09	.21	-.35	.40	.33	-.35	.33	.19
22.	LF76P	-.11	.25	.68	.18	-.50	.20	.17	.40	-.29	.17	-.32	.42	.30	-.32	.32	.22
23.	M2034_76	.06	.13	.37	-.34	-.44	-.14	-.25	.30	-.37	-.27	.31	-.22	-.30	.33	-.32	.11
24.	F2034_76	.05	.10	.38	-.34	-.46	-.15	-.23	.33	-.39	-.31	.33	-.17	-.33	.34	-.23	.15
25.	T2034_76	.05	.11	.38	-.34	-.46	-.15	-.24	.32	-.38	-.29	.32	-.19	-.32	.34	-.27	.13
26.	ELDER76M	-.09	-.04	-.30	.40	.45	.13	.23	-.24	.43	.31	-.38	.29	.34	-.37	.35	-.03
27.	ELDER76F	-.07	-.03	-.28	.36	.44	.06	.16	-.28	.43	.34	-.35	.15	.32	-.34	.25	-.06
28.	ELDER76T	-.08	-.03	-.29	.38	.45	.09	.19	-.27	.44	.33	-.36	.21	.33	-.35	.29	-.05
29.	SEXR76	-.06	-.08	.47	-.04	-.62	.29	.11	.44	-.52	.08	-.14	.18	.15	-.16	.11	-.01
30.	DEP76Y	-.06	-.11	.52	-.15	-.50	.15	-.01	.15	-.47	.28	-.27	.09	.30	-.31	.16	-.01
31.	DEP76E	-.09	-.05	-.26	.38	.42	.10	.19	-.26	.41	.36	-.40	.23	.37	-.39	.34	-.03
32.	DEP76T	-.15	-.15	.25	.22	-.08	.25	.18	-.11	-.06	.64	-.66	.31	.66	-.69	.49	-.03

Appendix D.8 continued.

		17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
17.	MUE76P															
18.	FUE76P	.37														
19.	UE76P	.88	.73													
20.	MLF76P	-.39	.25	-.21												
21.	FLF76P	-.44	-.21	-.30	.23											
22.	LF76P	-.51	.06	-.29	.76	.79										
23.	M2034_76	-.05	.23	-.01	.60	-.04	.37									
24.	F2034_76	.01	.28	.06	.65	-.02	.40	.96								
25.	T2034_76	-.02	.26	.03	.63	-.03	.39	.99	.99							
26.	ELDER76M	-.20	-.46	-.28	-.62	.23	-.26	-.80	-.85	-.84						
27.	ELDER76F	-.20	-.43	-.27	-.63	.20	-.29	-.75	-.81	-.79	.96					
28.	ELDER76T	-.20	-.45	-.27	-.63	.21	-.28	-.78	-.83	-.82	.99	.99				
29.	SEXR76	-.07	.42	.07	.70	-.10	.42	.56	.58	.58	-.72	-.77	-.76			
30.	DEP76Y	-.01	.34	.10	.59	.01	.40	.42	.51	.47	-.56	-.55	-.56	.66		
31.	DEP76E	-.21	-.43	-.27	-.60	.22	-.25	-.78	-.82	-.81	.98	.99	.99	-.73	-.48	
32.	DEP76T	-.22	-.09	-.17	-.01	.22	.15	-.36	-.31	-.34	.41	.44	.43	-.08	.50	.51

N of cases: 55

See Chapter 3 for variable definitions and Chapter 5 for means and standard deviations.

Appendix D.9 Correlation Matrix for the Independent Variables in 1981 in the Small City Data Set

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	POP81L																
2.	DEN81L	-.15															
3.	MIGR81P	-.13	-.20														
4.	DIV81P	.35	.01	-.11													
5.	LOPAR81P	.22	.16	-.43	.36												
6.	VIOL81R	-.02	-.58	.42	.11	.01											
7.	PROP81R	.15	-.42	.36	.36	.14	.78										
8.	CVINC81	-.02	-.19	.25	-.05	-.44	.35	.23									
9.	GINI81	.04	.18	-.20	.27	.37	-.19	-.12	-.69								
10.	BRIT81EP	.02	-.26	.34	-.05	-.47	.20	.14	-.02	-.03							
11.	FREN81EP	.02	.36	-.45	-.01	.53	-.41	-.36	-.14	.07	-.92						
12.	ETH81EP	-.08	-.37	.43	.11	-.37	.62	.59	.39	-.11	.27	-.63					
13.	ENGL81LP	-.01	-.34	.44	-.05	-.50	.36	.30	.08	-.07	.96	-.98	.51				
14.	FREN81LP	.02	.37	-.47	.04	.52	-.41	-.35	-.13	.08	-.92	.99	-.61	-.99			
15.	ETH81LP	-.05	-.32	.36	.01	-.38	.53	.50	.39	-.11	.21	-.55	.91	.42	-.54		
16.	POL81R	-.16	-.10	-.01	.07	.08	.40	.32	.40	-.27	-.18	.02	.30	-.06	.02	.24	
17.	MUE81P	.16	.03	-.54	-.13	.49	-.31	-.34	-.27	.22	-.54	.68	-.60	-.65	.67	-.47	-.05
18.	FUE81P	.06	-.03	-.31	-.16	.12	-.30	-.41	.01	-.12	-.35	.53	-.60	-.49	.53	-.50	-.10
19.	UE81P	.14	.01	-.49	-.14	.39	-.33	-.38	-.19	.10	-.50	.67	-.64	-.63	.67	-.52	-.07
20.	MLF81P	-.11	-.16	.61	-.06	-.46	.40	.28	.70	-.50	.16	-.33	.48	.27	-.32	.44	.33
21.	FLF81P	-.06	-.14	.58	.01	-.17	.60	.55	.42	-.28	.19	-.39	.58	.33	-.39	.52	.41
22.	LF81P	-.10	-.20	.66	-.04	-.36	.57	.46	.63	-.44	.19	-.40	.59	.33	-.39	.53	.41
23.	M2034_81	-.21	.03	.20	-.23	.22	.09	-.02	-.09	-.01	-.29	.29	-.12	-.28	.28	-.14	.15
24.	F2034_81	-.12	-.03	.08	-.26	.31	.19	.07	.21	-.26	-.50	.46	-.13	-.46	.45	-.12	.36
25.	T2034_81	-.17	-.01	.16	-.27	.28	.15	.03	.07	-.15	-.43	.40	-.14	-.40	.39	-.14	.28
26.	SEXR81	-.17	-.45	.41	-.13	-.37	.45	.16	.61	-.45	.05	-.16	.30	.13	-.16	.25	.29
27.	ELDER81M	-.01	.14	-.15	.27	.06	-.18	.07	-.50	.48	.34	-.35	.18	.35	-.35	.17	-.25
28.	ELDER81F	-.01	.22	-.19	.24	.07	-.23	.01	-.52	.46	.36	-.33	.10	.34	-.33	.11	-.25
29.	ELDER81T	-.01	.19	-.17	.25	.07	-.21	.03	-.51	.47	.35	-.34	.14	.35	-.34	.14	-.25
30.	DEP81Y	-.08	-.31	.32	-.45	-.46	.25	-.06	.36	-.39	.25	-.29	.21	.29	-.30	.20	.11
31.	DEP81E	-.01	.17	-.15	.22	.04	-.20	.03	-.50	.45	.39	-.38	.17	.38	-.38	.17	-.24
32.	DEP81T	-.09	-.10	.14	-.18	-.38	.01	-.02	-.21	.13	.65	-.68	.38	.68	-.69	.37	-.16

Continued ...

Appendix D.9 continued.

		17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
17.	MUE81P															
18.	FUE81P	.71														
19.	UE81P	.96	.88													
20.	MLF81P	-.55	-.21	-.47												
21.	FLF81P	-.52	-.55	-.57	.67											
22.	LF81P	-.58	-.39	-.55	.92	.90										
23.	M2034_81	.20	.32	.26	.10	.02	.09									
24.	F2034_81	.40	.48	.45	.27	.12	.24	.71								
25.	T2034_81	.33	.44	.39	.20	.08	.18	.92	.93							
26.	SEXR81	-.14	.26	-.01	.62	.22	.52	.37	.48	.47						
27.	ELDER81M	-.27	-.56	-.40	-.50	-.15	-.39	-.39	-.74	-.62	-.69					
28.	ELDER81F	-.26	-.55	-.39	-.49	-.12	-.37	-.39	-.76	-.63	-.75	.98				
29.	ELDER81T	-.27	-.55	-.39	-.50	-.13	-.38	-.40	-.76	-.63	-.73	.99	.99			
30.	DEP81Y	-.14	.15	-.05	.54	.24	.45	-.08	.28	.12	.55	-.56	-.57	-.57		
31.	DEP81E	-.29	-.56	-.41	-.47	-.11	-.35	-.41	-.76	-.64	-.71	.99	.99	.99	-.51	
32.	DEP81T	-.44	-.47	-.49	-.01	.10	.03	-.52	-.56	-.58	-.27	.55	.55	.55	.37	.61

N of cases: 55

See Chapter 3 for variable definitions and Chapter 5 for means and standard deviations.

Appendix E

Correlations between Characteristics of Cities and Provincial Location in 1971, 1976 and 1981

Variable \ Year	1971	1976	1981
Population[1]	.09	.10	.13
Density[2]	.11	.11	-.09
% Migration	--	.25	.49
% Divorced	.66	.65	.50
% Lone parents	--	-.15	-.23
Violent Crime Rate	--	.37	.45
Property Crime Rate	--	.51	.56
Income Dissimilarity	.21	.33	.43
Gini	-.01	-.01	-.01
% British	.04	.04	.04
% French ethnic	-.35	-.35	-.35
% Other ethnic	.71	.70	.72
% English mother tongue	.23	.26	.25
% French mother tongue	-.34	-.34	-.33
% Other mother tongue	.61	.59	.61
Police per capita	-.01	.03	.17
% UE (male)	-.15	-.22	-.46
% UE (female)	.01	-.11	-.45
% UE (total)	-.08	-.17	-.48
% LFP (male)	.32	.17	.30
% LFP (female)	.30	.26	.33
% LFP (total)	.37	.27	.35
% Males 20-34	-.21	-.22	-.22
% Females 20-34	-.22	-.16	-.14
% Total 20-34	-.22	-.18	-.19
% Elderly (Male)	.31	.29	.21
% Elderly (Female)	.14	.11	.09
% Elderly (Total)	.21	.19	.14
Sex Ratio	.21	.19	.18
Dependency Ratio (Youth)	.06	-.14	-.17
Dependency Ratio (Elderly)	.23	.18	.14
Dependency Ratio (Total)	.12	.02	-.01

N=109

Note: -- unavailable

[1] Population is logged (base 10) to correct for skewness in 1971, 1976 and 1981.

[2] Density is logged (base 10) to correct for skewness in 1981